

# Computation of PL functions for edge lengths & labelling of leaves for NON gen cases

We write the lengths of all edges in terms of the scalars & up to 5 extra parameters  $g_0, \dots, g_5$  accounting for the difference between the valuation of the cross functions & the expected ones. Note that the expected valuation of cross 15 on  $a_2 a_4$ ,  $a_2 a_4$ ,  $a_2 a_4$  &  $a_4$  is not  $g_{15}$ . We obtain the correct value by a minor computation. (in the notes for E5, F35 & G3 for these cases)

Namely: 
$$\text{Exp}(g_{15}) = -2g_1 - 2g_2 - g_3 + 4g_4 - \frac{2}{3}g_5 - g_6 + g_{10} - g_{14} - g_{15} - g_{16} + 4g_{17} - \frac{2}{3}g_{18} - \frac{7}{3}g_{20} + \frac{5}{3}g_{21} - \frac{2}{3}g_{22} - g_{24} + g_{25} - \frac{1}{3}g_{26} - \frac{1}{3}g_{27} - g_{28} + g_{29} + \frac{13}{3}g_{30} + g_{32} + 2g_{34} - g_{36} + g_{38} - g_{39}$$

Exp  $g_{15}$  valn =  $-2g_1 - 2g_2 - g_3 + 4g_4 - \frac{2}{3}g_5 - g_6 + g_{10} - g_{14} - g_{15} - g_{16} + 4g_{17} - \frac{2}{3}g_{18} - \frac{7}{3}g_{20} + \frac{5}{3}g_{21} - \frac{2}{3}g_{22} - g_{24} + g_{25} - \frac{1}{3}g_{26} - \frac{1}{3}g_{27} - g_{28} + g_{29} + \frac{13}{3}g_{30} + g_{32} + 2g_{34} - g_{36} + g_{38} - g_{39}$

*only on the cross combinatorics*  
 Cases 'a2a4', 'a2a4', 'a2a4', 'a4'

We write down the 5 crosses involved in the construction of the 10 Tropical Nodes for each Extremal [after shifting ~~matrix~~ all columns].

- E1: [ cross 9, cross 33, cross 42, cross 78, cross 111 ]
- E2: [ cross 21, cross 63, cross 93, cross 105, cross 114 ]
- E3: [ cross 0, cross 84, cross 90, cross 99, cross 102 ]
- E4: [ cross 3, cross 18, cross 28, cross 73, cross 126 ]
- E5: [ cross 15, cross 24, cross 66, cross 76, cross 87 ]
- E6: [ cross 37, cross 45, cross 51, cross 110, cross 123 ]
- F12: [ cross 9, cross 57, cross 81, cross 97, cross 114 ]
- F13: [ cross 0, cross 48, cross 78, cross 117, cross 132 ]
- F14: [ cross 12, cross 18, cross 42, cross 120, cross 129 ]
- F15: [ cross 24, cross 30, cross 41, cross 54, cross 111 ]
- F16: [ cross 6, cross 33, cross 45, cross 60, cross 69 ]
- F23: [ cross 6, cross 30, cross 84, cross 105, cross 129 ]
- F24: [ cross 21, cross 41, cross 48, cross 60, cross 126 ]
- F25: [ cross 69, cross 87, cross 93, cross 120, cross 132 ]
- F26: [ cross 12, cross 54, cross 63, cross 110, cross 117 ]

F34 : [Cross 28, Cross 54, Cross 57, Cross 69, Cross 102]

F35 : [Cross 12, Cross 15, Cross 60, Cross 81, Cross 90]

F36 : [Cross 37, Cross 41, Cross 97, Cross 99, Cross 120]

F45 : [Cross 3, Cross 9, Cross 76, Cross 97, Cross 117]

F46 : [Cross 30, Cross 73, Cross 81, Cross 123, Cross 132]

F56 : [Cross 48, Cross 51, Cross 57, Cross 66, Cross 129]

G1 : [Cross 0, Cross 18, Cross 24, Cross 45, Cross 114]

G2 : [Cross 9, Cross 84, Cross 87, Cross 110, Cross 126]

G3 : [Cross 15, Cross 28, Cross 37, Cross 78, Cross 105]

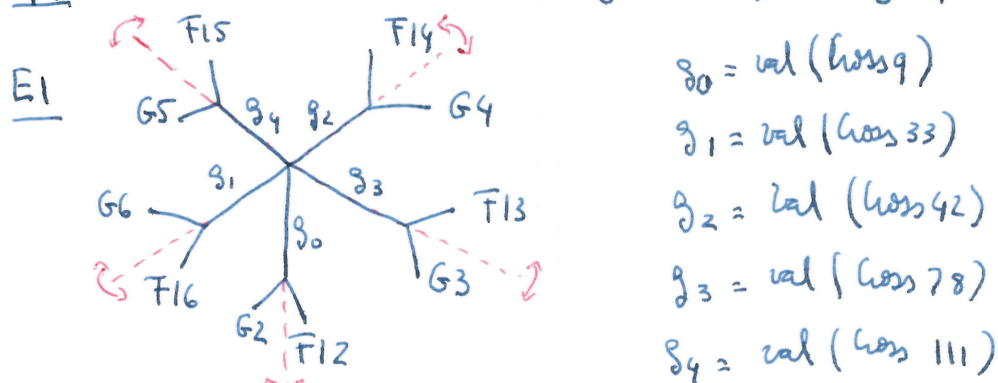
G4 : [Cross 21, Cross 42, Cross 76, Cross 102, Cross 123]

G5 : [Cross 3, Cross 51, Cross 90, Cross 93, Cross 111]

G6 : [Cross 33, Cross 63, Cross 66, Cross 73, Cross 99]

There are nm-gen Trees for all extremals, i.e. we can find a suitable one where one of the 5 cross functions has an undetermined value. There are 223 such combinations (extremal, <sup>w/ apex</sup> cone). All the 5 Cross have undetermined value for the Apex.

Apex : All Trees look alike by the Symmetry of the  $W(E_6)$ -action.

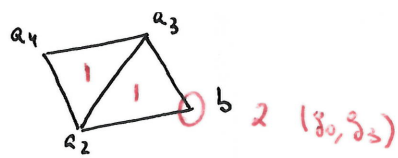


Note : The moduli space is 4-dimensional, so there must be a linear relation among  $g_0, \dots, g_4$

$$\left\{ \begin{array}{l} \text{Cross } 9 = y_9 - y_{29} = y_{17} + y_{37} = y_8 - y_{11} = y_3 + y_6 \\ \text{Cross } 33 = y_2 - y_{30} = y_{16} + y_{22} = y_{10} - y_5 = y_{18} + y_{25} \\ \text{Cross } 42 = y_{14} - y_{31} = y_{24} - y_{36} = y_{13} - y_{38} = y_{33} - y_{39} \\ \text{Cross } 78 = y_2 - y_{25} = y_{18} + y_{30} = y_1 + y_{35} = y_{19} - y_{28} \\ \text{Cross } 111 = y_{19} - y_1 = y_{28} + y_{35} = y_9 - y_{17} = y_{29} + y_{37} \end{array} \right.$$

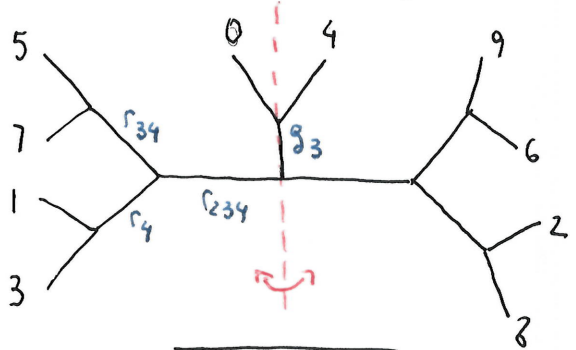
Next : We discuss the nm-apex combinations.

Extremal E1

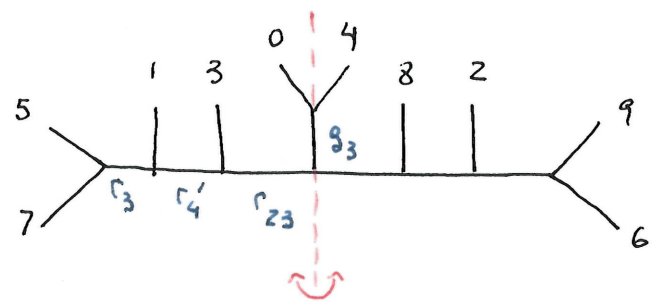


Rest =  $g_3 = \cos 78 - \gamma_{35}$

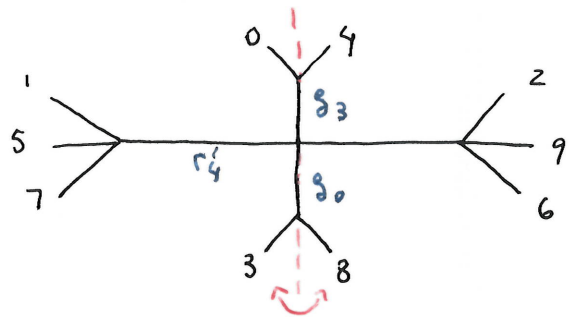
$g_0 = \cos 9 - \gamma_{37}$



cmc a2a3a4



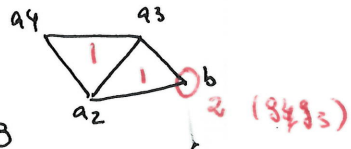
cmc a2a3b



cmc b

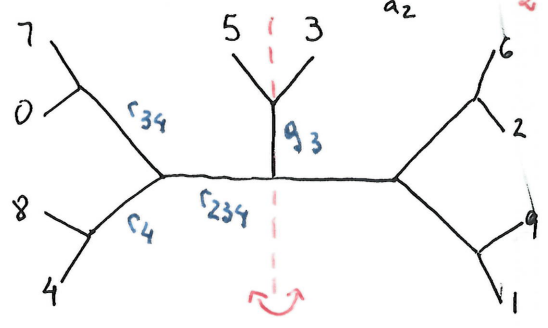
{ 0: G3, 1: G6, 2: F16, 3: F12, 4: F13, 5: G4, 6: F15, 7: G5, 8: G2, 9: F14 }

Extremal E2 :

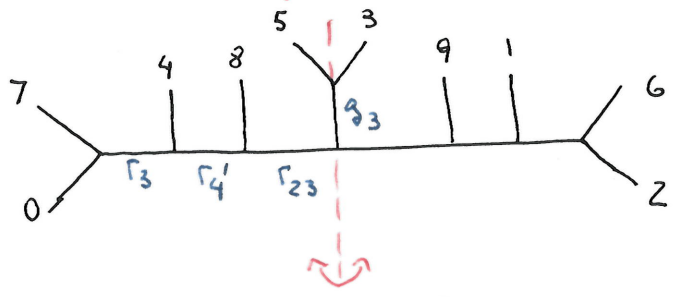


Rest :  $g_3 = \cos 105 - \gamma_{35}$

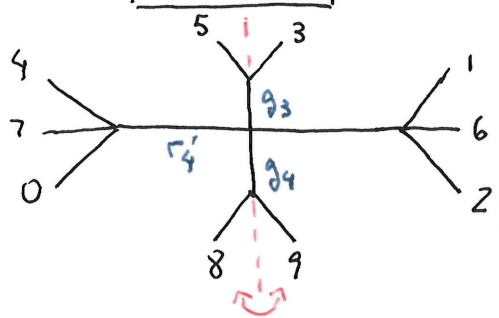
$g_4 = \cos 114 - \gamma_{38}$



cmc a2a3a4



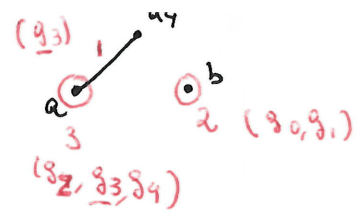
cmc a2a3b



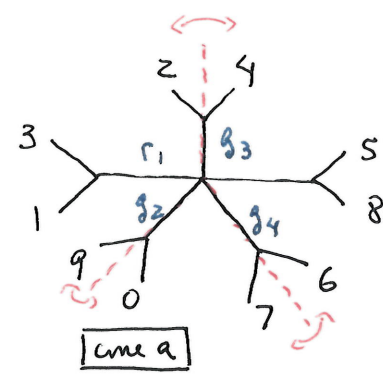
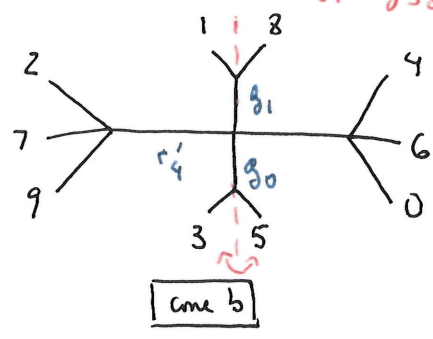
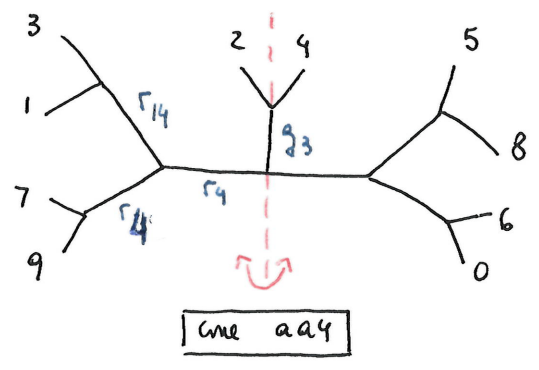
cmc b

{ 0: G5, 1: F26, 2: F25, 3: F23, 4: G6, 5: G3, 6: F24, 7: G4, 8: F12, 9: G1 }

Extremal E3

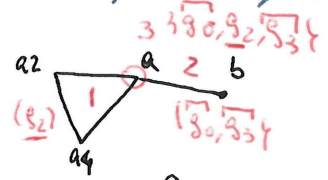


$g_3 = \cos 99 - y_{39}$   
 $g_2 = \cos 90 - y_{32}$   
 $g_4 = \cos 102 - y_{39}$   
 $g_0 = \cos 0 - y_{39}$   
 $g_1 = \cos 24 - y_{38}$

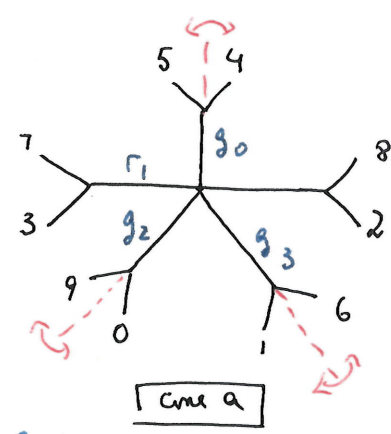
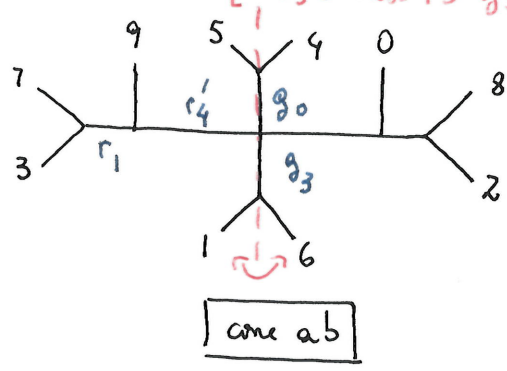
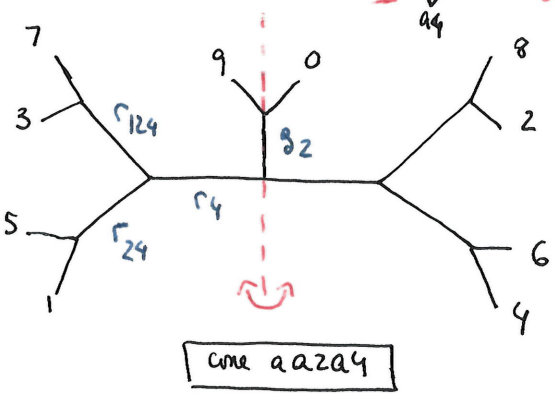


{ 0: F35, 1: F23, 2: G6, 3: F13, 4: F36, 5: G1, 6: F34, 7: G4, 8: G2, 9: G5 }

Extremal E4

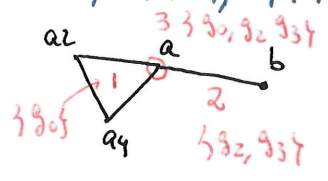


Root:  $g_2 = \cos 28 - y_{28}$   
 $g_0 = \cos 3 - y_{38}$   
 $g_3 = \cos 73 - y_{39}$



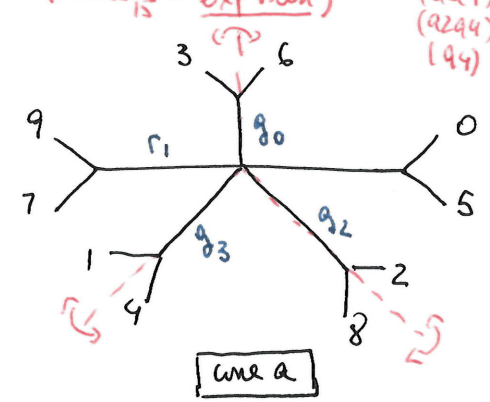
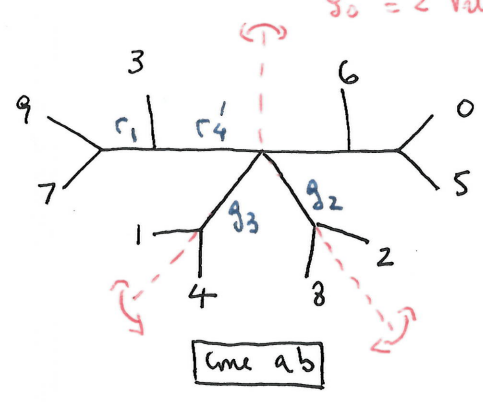
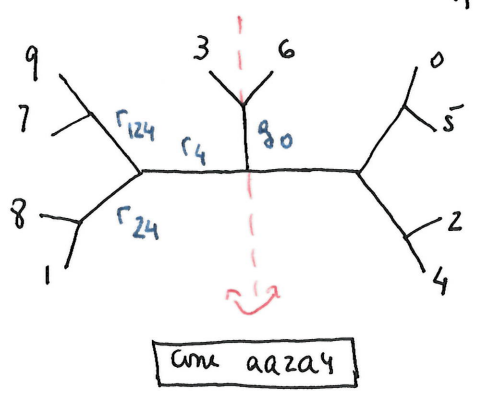
{ 0: G3, 1: F46, 2: G2, 3: F29, 4: F45, 5: G5, 6: G6, 7: F14, 8: G1, 9: F34 }

Extremal E5



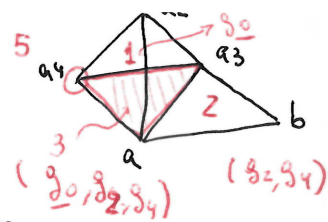
$g_2 = \cos 66 - y_{38}$   
 $g_3 = \cos 76 - y_{38}$   
 $g_0 = 2 \text{ Values (} \cos_{15} - \text{exp Valn)}$

$g_{32}$  on a22, a24  
 Linear on (a24)  
 (a24)  
 (a24)  
 (a4)

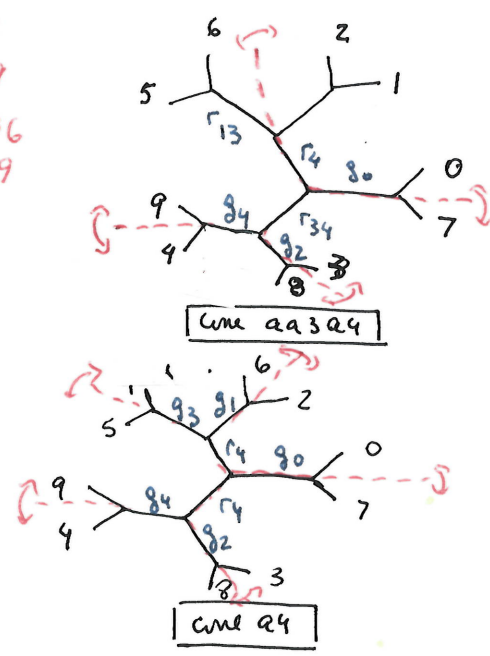
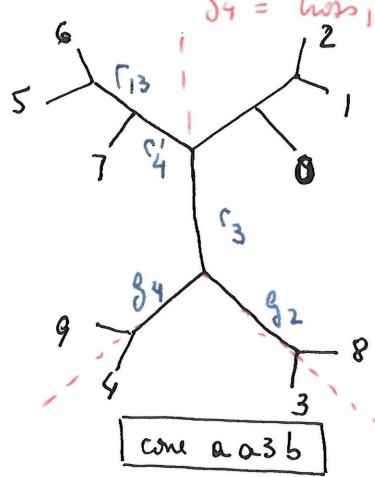
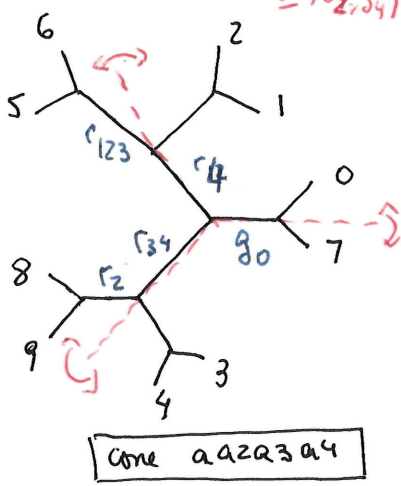


{ 0: G2, 1: G4, 2: G6, 3: F35, 4: F45, 5: G1, 6: G3, 7: F15, 8: F56, 9: F25 }

Extremal E6

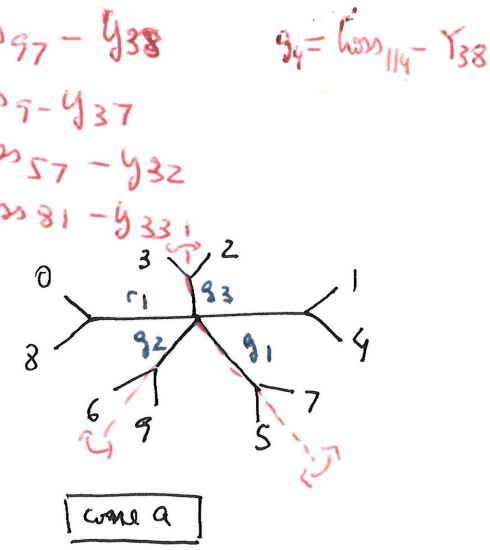
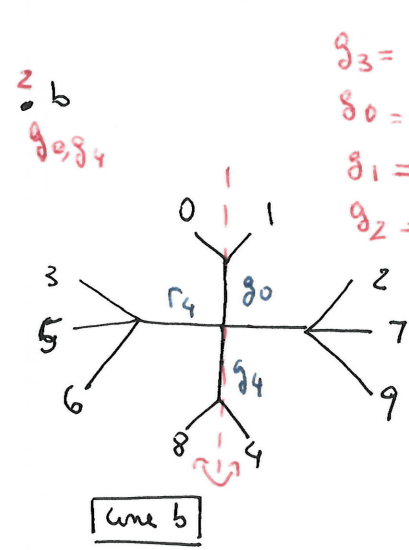
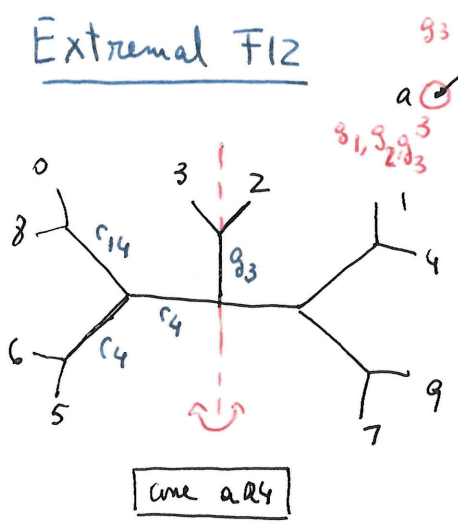


$g_0 = \cos 37 - y_{34}$   
 $g_1 = \cos 45 - y_{38}$   
 $g_2 = \cos 51 - y_{39}$   
 $g_3 = \cos 110 - y_{36}$   
 $g_4 = \cos 123 - y_{39}$



- { 0: G3, 1: G2, 2: G1, 3: F56, 4: G4, 5: F26, 6: F16, 7: F36, 8: G5, 9: F46 }

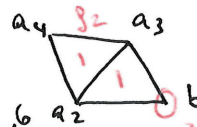
Extremal F12



$g_3 = \cos 97 - y_{38}$   
 $g_4 = \cos 114 - y_{38}$   
 $g_0 = \cos 9 - y_{37}$   
 $g_1 = \cos 57 - y_{32}$   
 $g_2 = \cos 81 - y_{33}$

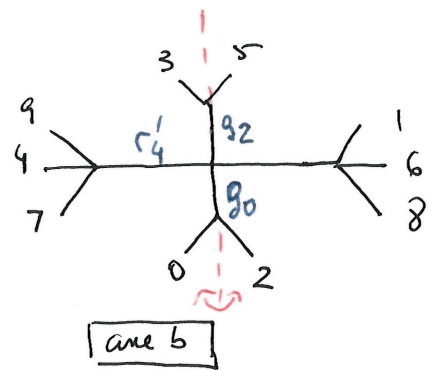
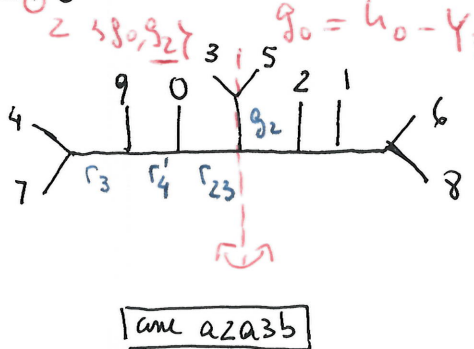
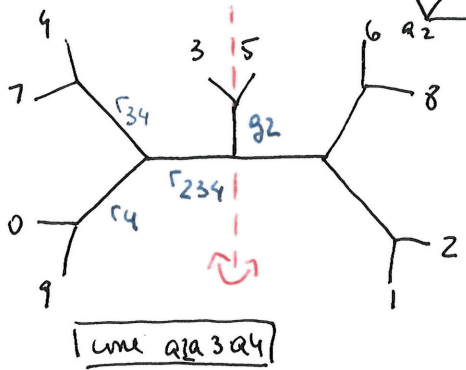
- { 0: E1, 1: G2, 2: F36, 3: F45, 4: G1, 5: F56, 6: F46, 7: F34, 8: E2, 9: F35 }

Extremal F13



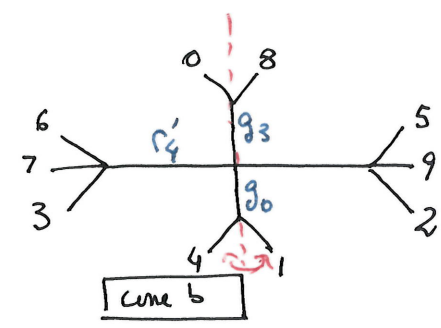
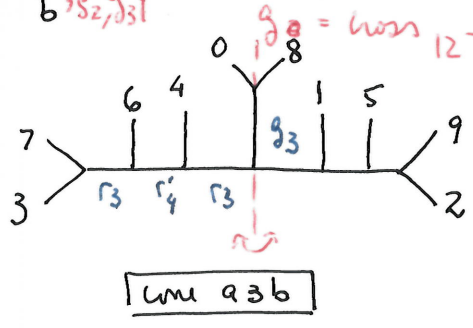
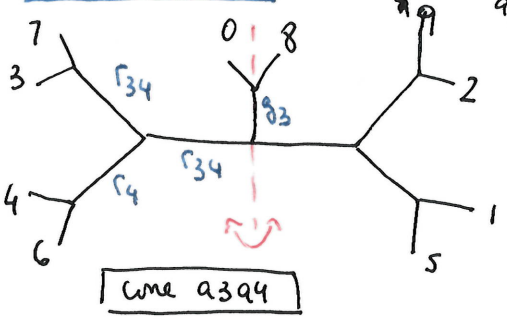
Rest  $g_2 = \cos 78 - y_{35}$

$g_0 = \cos 40 - y_{39}$



- { 0: G1, 1: F45, 2: E3, 3: E1, 4: F24, 5: G3, 6: F56, 7: F25, 8: F46, 9: F26 }

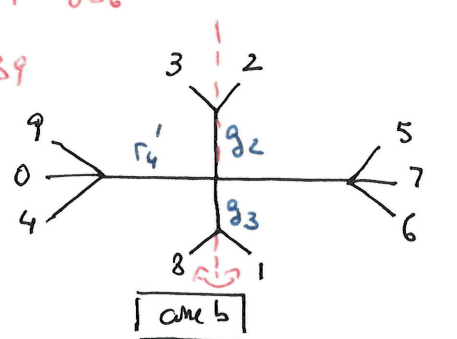
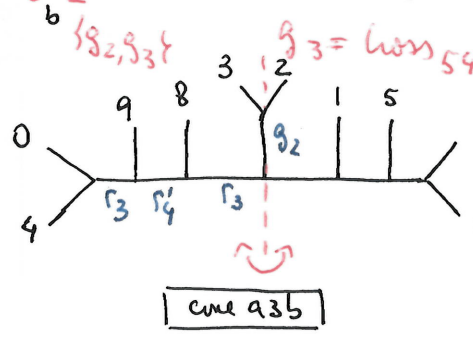
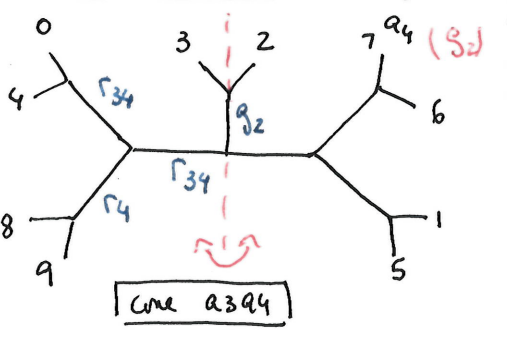
Extremal F14



Rest:  $g_3 = \text{loss}_{120} - y_{36}$

{0: F36, 1: F26, 2: F23, 3: F56, 4: F35, 5: G1, 6: E4, 7: E4, 8: F25, 9: E1}

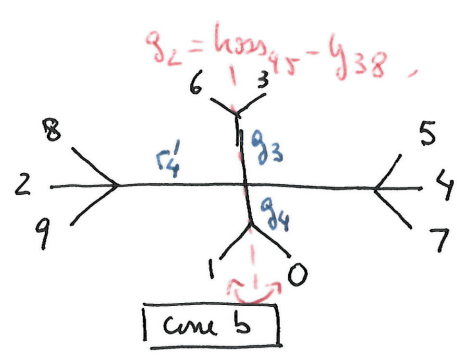
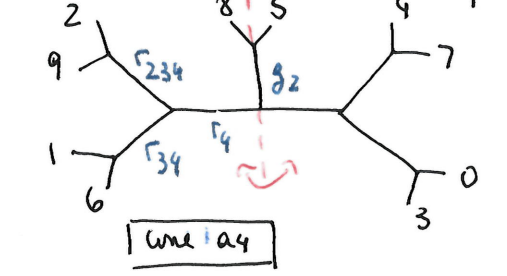
Extremal F15



Rest  $g_2 = \text{loss}_{41} - y_{36}$

{0: G5, 1: F26, 2: F24, 3: F36, 4: F46, 5: G1, 6: F23, 7: E1, 8: F34, 9: E5}

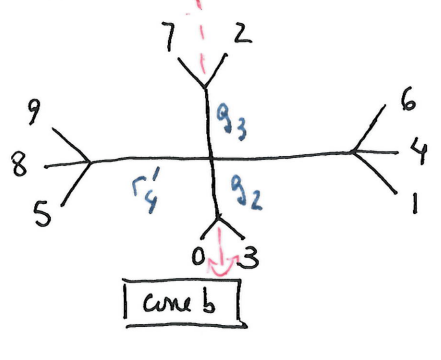
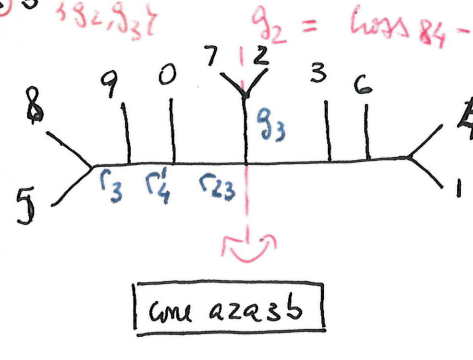
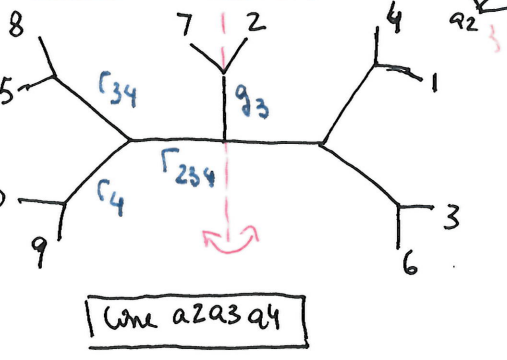
Extremal F16



$g_3 = \text{loss}_{60} - y_{35}$   
 $g_4 = \text{loss}_{69} - y_{36}$

{0: F25, 1: F34, 2: G6, 3: F24, 4: E1, 5: G1, 6: F35, 7: F23, 8: E6, 9: F45}

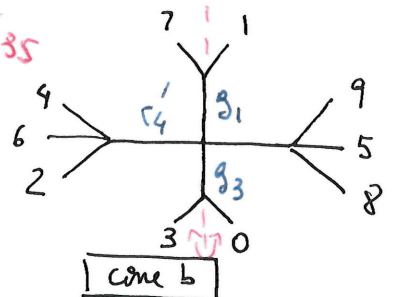
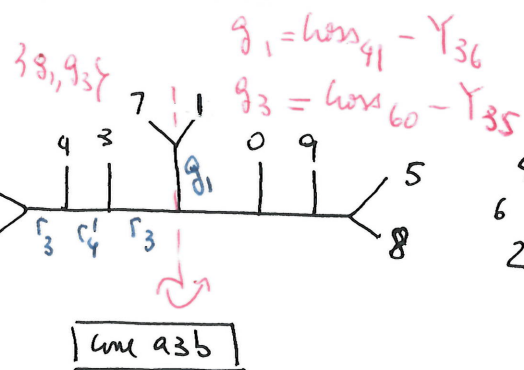
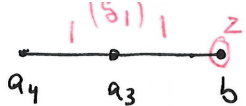
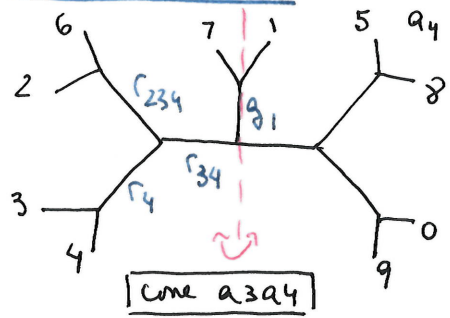
Extremal F23



Rest:  $g_3 = \text{loss}_{105} - y_{35}$

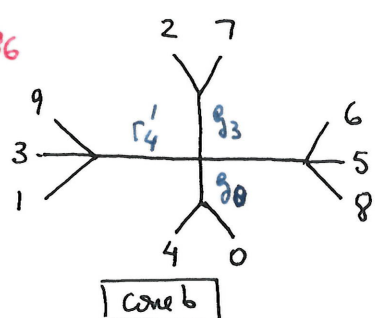
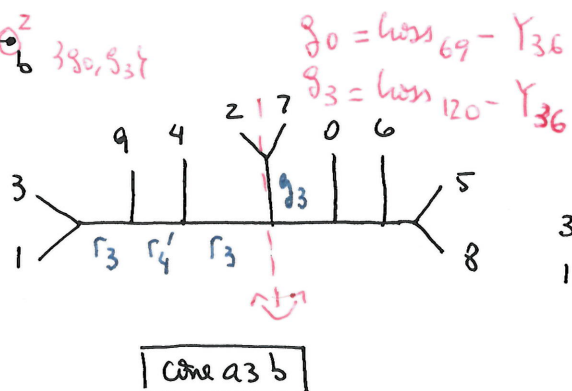
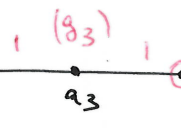
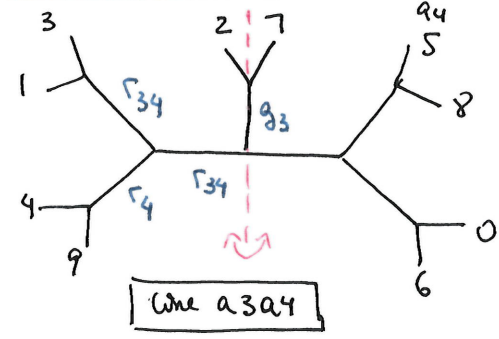
{0: E3, 1: F14, 2: E2, 3: G2, 4: F15, 5: F56, 6: F16, 7: G3, 8: F46, 9: F45}

Extremal F24



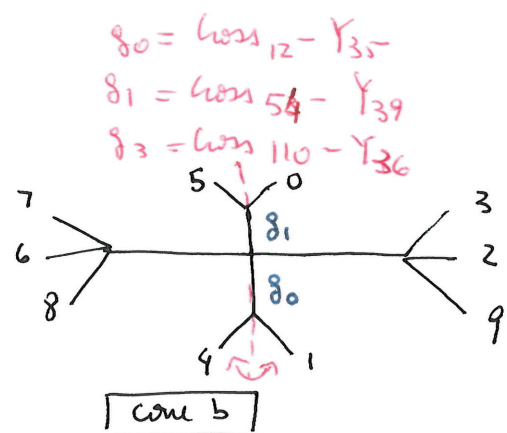
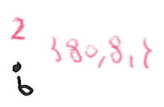
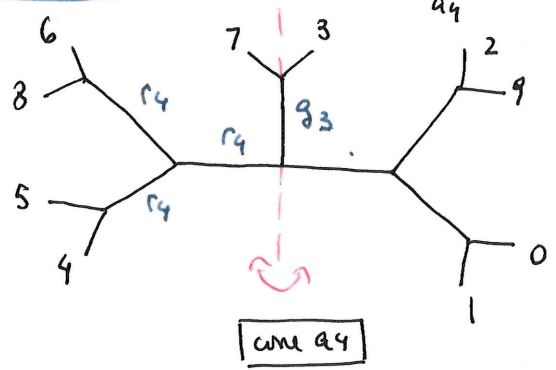
{ 0: F16, 1: FIS, 2: FS6, 3: F35, 4: E4, 5: E2, 6: G4, 7: F36, 8: F13, 9: G2 }

Extremal F25



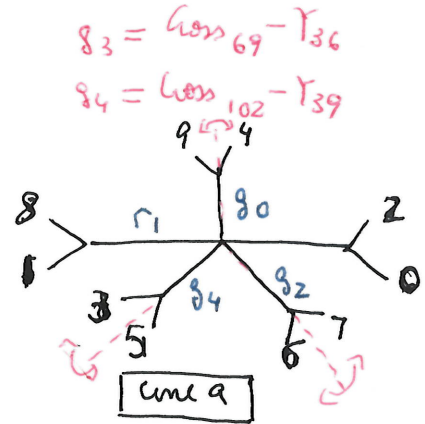
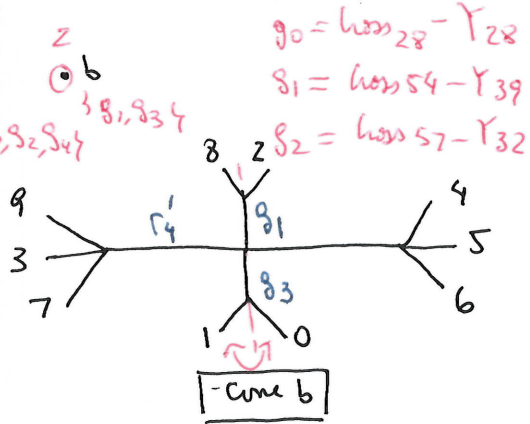
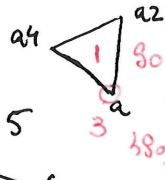
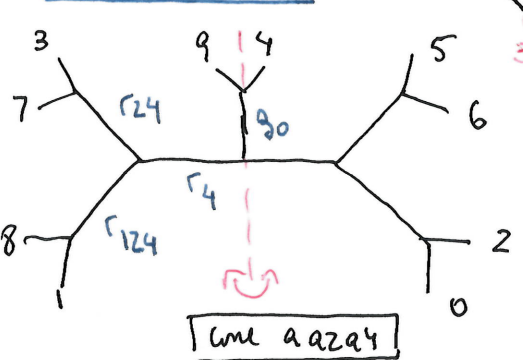
{ 0: F16, 1: F46, 2: F36, 3: G5, 4: F34, 5: E2, 6: G2, 7: F14, 8: F13, 9: E5 }

Extremal F26



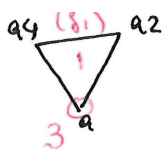
{ 0: FIS, 1: F14, 2: E2, 3: G2, 4: F35, 5: F34, 6: G6, 7: E6, 8: F45, 9: F13 }

Extremal F34



{ 0: F16, 1: F25, 2: F26, 3: G4, 4: G3, 5: E3, 6: F12, 7: FS6, 8: FIS, 9: E4 }

Extremal F35

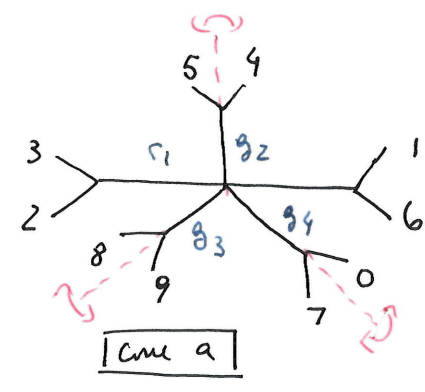
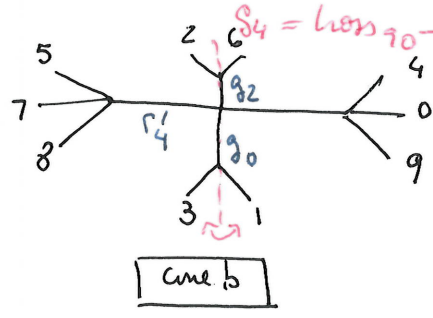
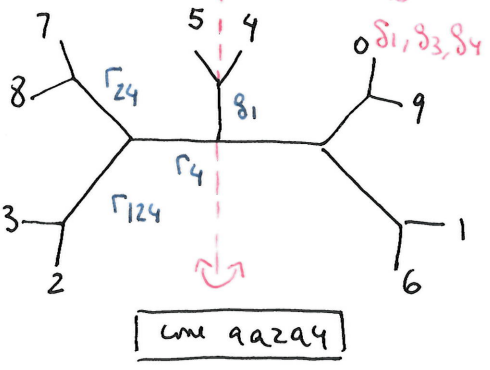


$\cdot b$   
2 {80, 82}

$g_1 = \text{loss}_{15} - \text{ExpVal}$   
 $g_0 = \text{loss}_{12} - Y_{35}$   
 $g_2 = \text{loss}_{60} - Y_{35}$   
 $g_3 = \text{loss}_{81} - Y_{33}$   
 $g_4 = \text{loss}_{90} - Y_{32}$

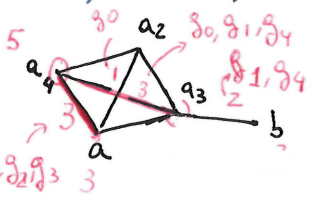
$Y_{32}$  for  $a_{a2}, a_2, a$   
linear for rest

Nm-Gen [8]



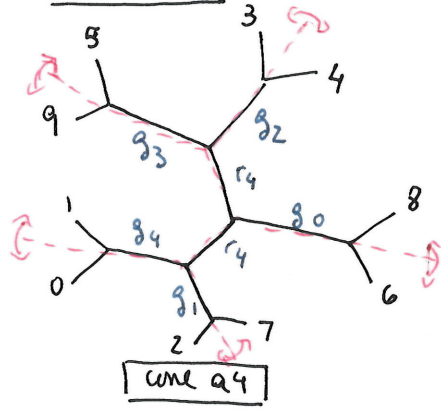
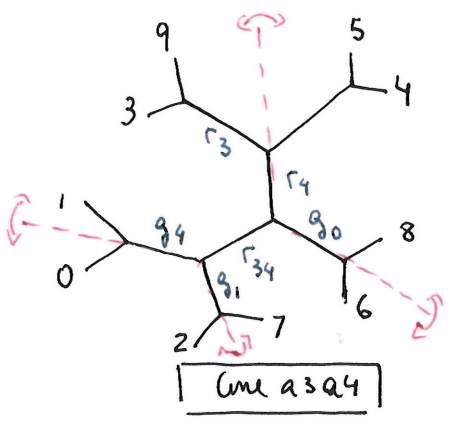
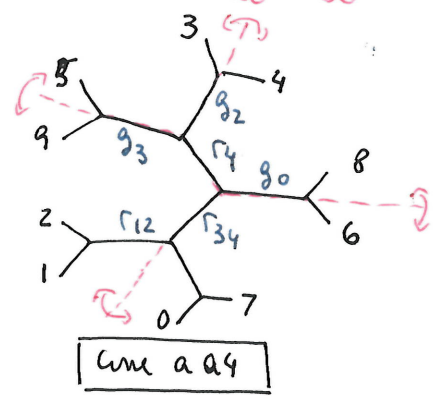
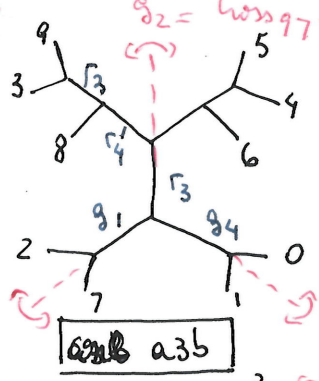
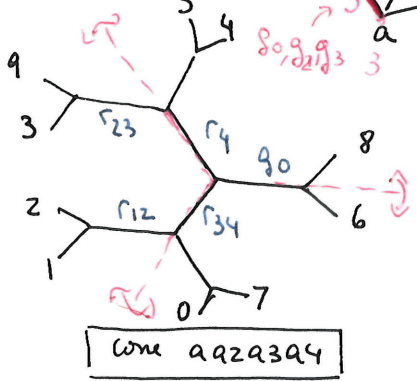
{0: E3, 1: F26, 2: F24, 3: F14, 4: G3, 5: E5, 6: F16, 7: G5, 8: F46, 9: F12}

Extremal F36



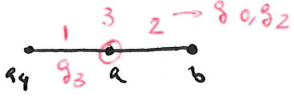
$g_0 = \text{loss}_{37} - Y_{34}$   
 $g_1 = \text{loss}_{41} - Y_{36}$   
 $g_2 = \text{loss}_{97} - Y_{38}$

$g_3 = \text{loss}_{99} - Y_{39}$   
 $g_4 = \text{loss}_{120} - Y_{36}$



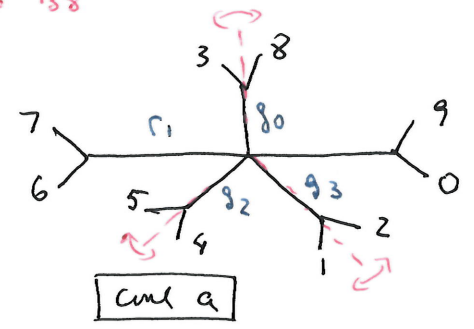
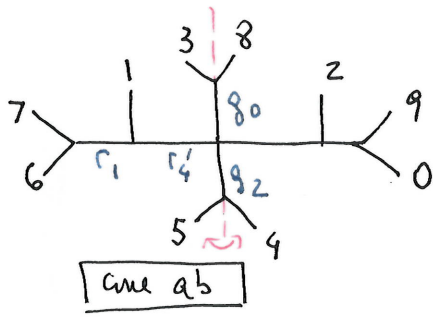
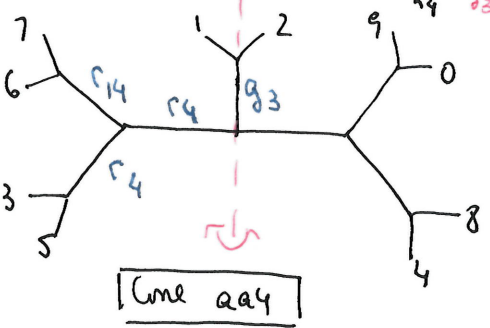
{0: F14, 1: F25, 2: F15, 3: F45, 4: F12, 5: E3, 6: G3, 7: F24, 8: E6, 9: G6}

Extremal F45



$g_0 = \text{loss}_3 - Y_{38}$   
 $g_2 = \text{loss}_{76} - Y_{38}$

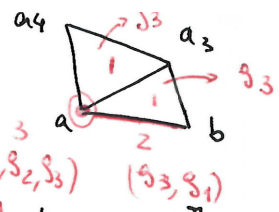
$g_3 = \text{loss}_{97} - Y_{38}$



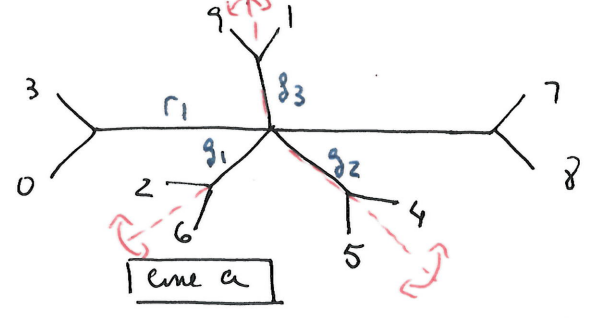
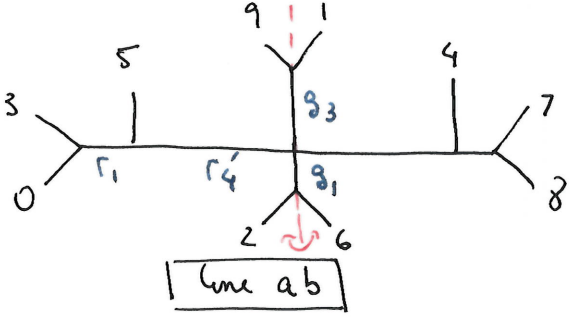
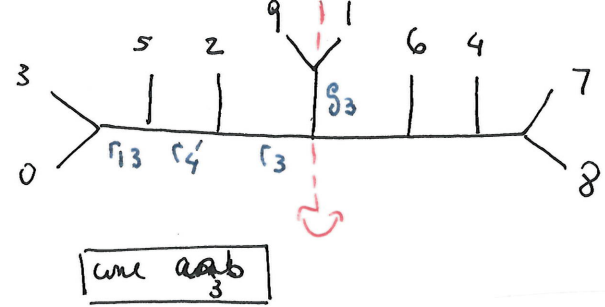
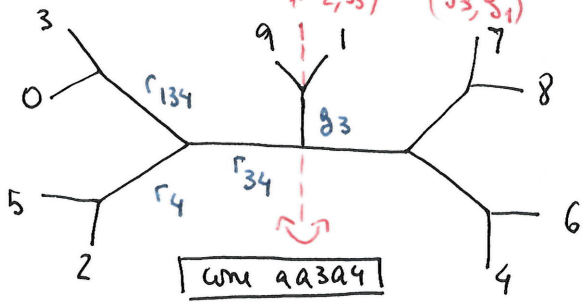
{0: F13, 1: F36, 2: F12, 3: E4, 4: G4, 5: E5, 6: F26, 7: F16, 8: G5, 9: F23}



Extremal F46

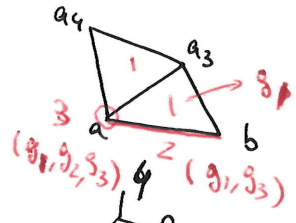


$$\begin{aligned} g_1 &= \text{hom}_{73} - \gamma_{39} \\ g_2 &= \text{hom}_{81} - \gamma_{33} \\ g_3 &= \text{hom}_{123} - \gamma_{39} \end{aligned}$$

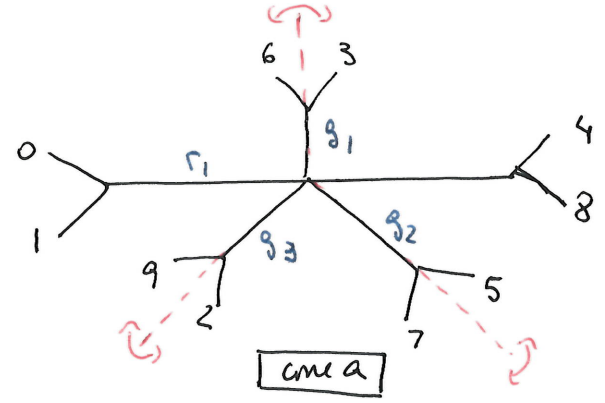
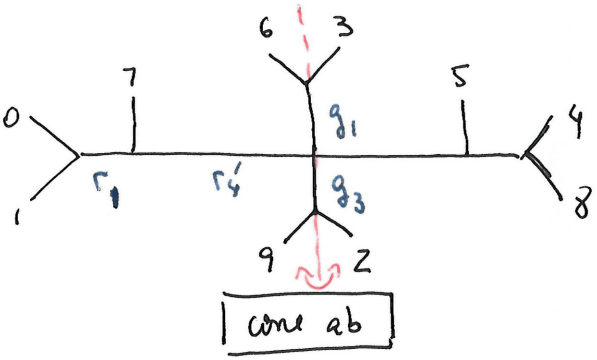
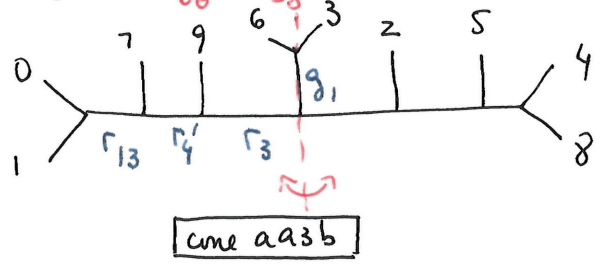
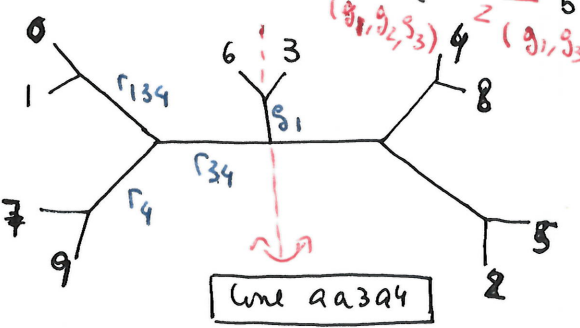


{0: F25, 1: G4, 2: E4, 3: F15, 4: F12, 5: F35, 6: G6, 7: F23, 8: F13, 9: E6}

Extremal F56

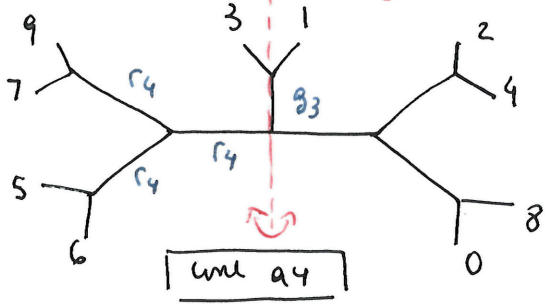


$$\begin{aligned} g_1 &= \text{hom}_{51} - \gamma_{39} \\ g_2 &= \text{hom}_{57} - \gamma_{32} \\ g_3 &= \text{hom}_{66} - \gamma_{38} \end{aligned}$$

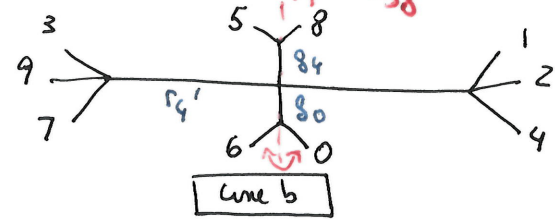


{0: F14, 1: F24, 2: G6, 3: G5, 4: F23, 5: F12, 6: E6, 7: F34, 8: F13, 9: E5}

Extremal G1

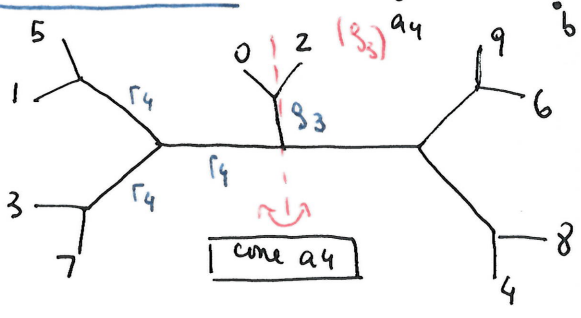


$\delta_0 = \text{hom}_{30} - \gamma_{39}$   
 $\delta_3 = \text{hom}_{45} - \gamma_{38}$   
 $\delta_4 = \text{hom}_{114} - \gamma_{38}$

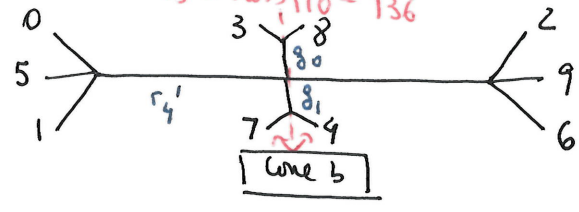


{0:F13, 1:F16, 2:F14, 3:E6, 4:F15, 5:F12, 6:E3, 7:E5, 8:E2, 9:E4}

Extremal G2

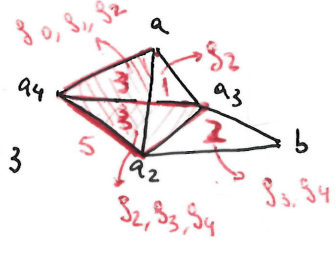


$\delta_0 = \text{hom}_9 - \gamma_{37}$   
 $\delta_1 = \text{hom}_{84} - \gamma_{38}$   
 $\delta_3 = \text{hom}_{110} - \gamma_{36}$



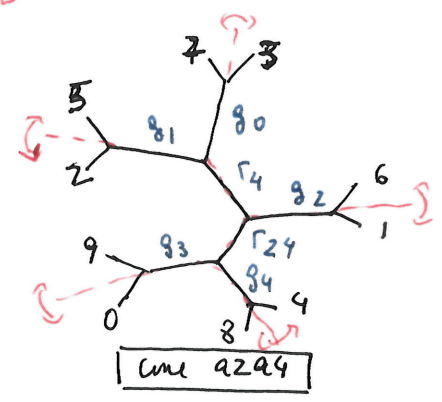
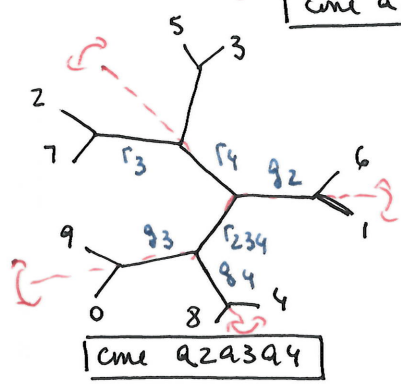
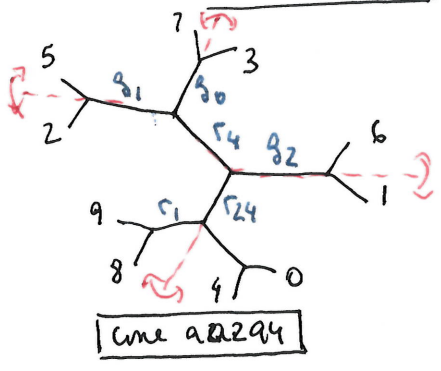
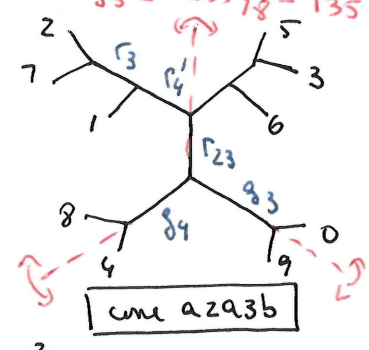
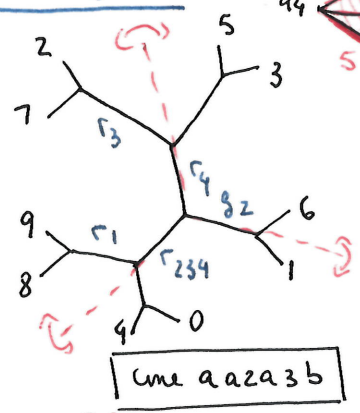
{0:E5, 1:E5, 2:F26, 3:F12, 4:F23, 5:E4, 6:F25, 7:E3, 8:E1, 9:F24}

Extremal G3



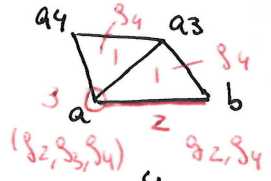
$\delta_1 = \text{hom}_{28} - \gamma_{28}$   
 $\delta_2 = \text{hom}_{37} - \gamma_{34}$   
 $\delta_3 = \text{hom}_{78} - \gamma_{35}$

$\delta_4 = \text{hom}_{105} - \gamma_{35}$   
 $\delta_0 = \text{hom}_{15} - \text{Exp}$



{0:E1, 1:E6, 2:E4, 3:F35, 4:E2, 5:F34, 6:F36, 7:E5, 8:F23, 9:F13}

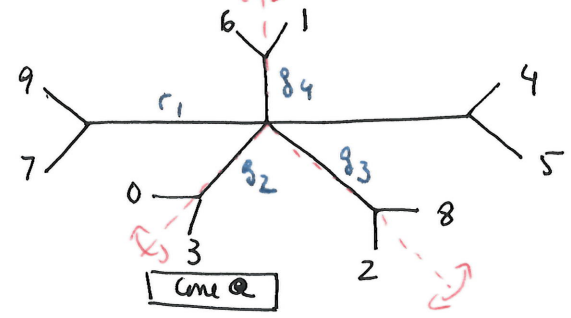
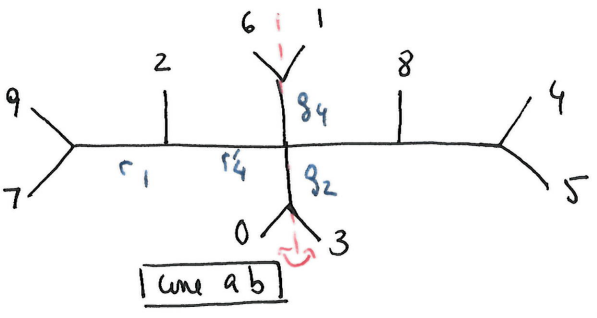
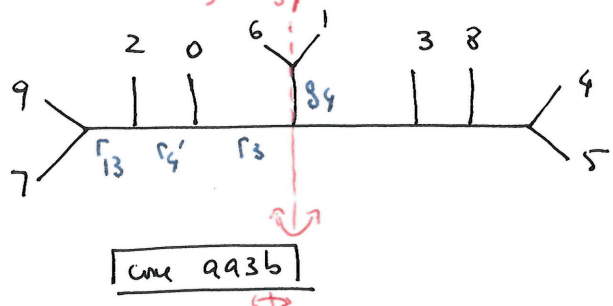
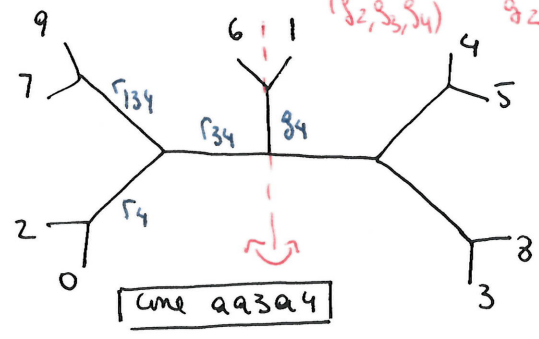
Extremal G4:



$$g_2 = \text{loss}_{76} - Y_{33}$$

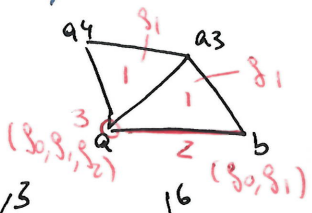
$$g_3 = \text{loss}_{102} - Y_{39}$$

$$g_4 = \text{loss}_{123} - Y_{39}$$



$\{0: E5, 1: F46, 2: F34, 3: F35, 4: E1, 5: E2, 6: E6, 7: F24, 8: E3, 9: F14\}$

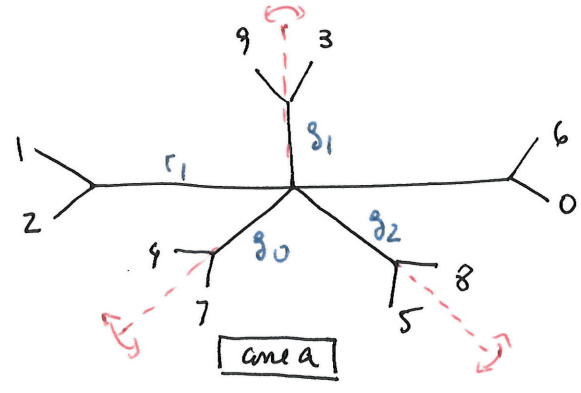
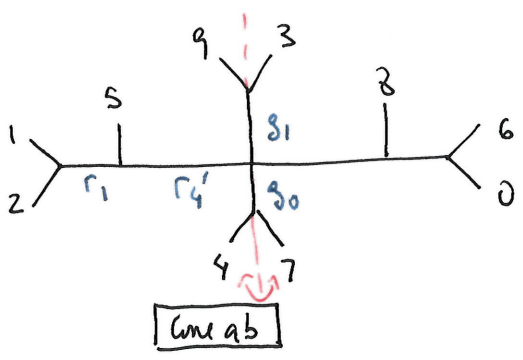
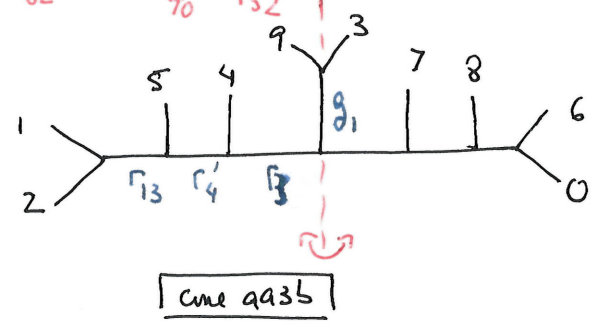
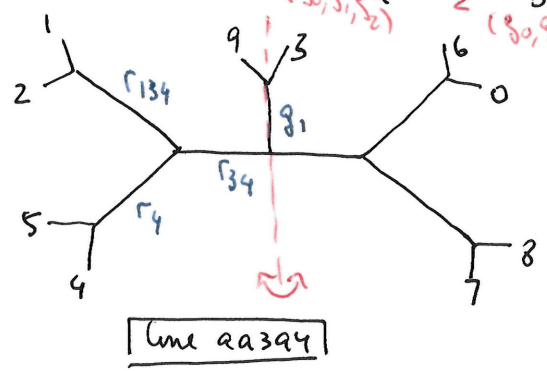
Extremal G5



$$g_0 = \text{loss}_3 - Y_{38}$$

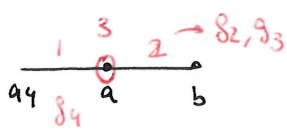
$$g_1 = \text{loss}_{51} - Y_{39}$$

$$g_2 = \text{loss}_{90} - Y_{32}$$



$\{0: E2, 1: F15, 2: F25, 3: F56, 4: E4, 5: F35, 6: E1, 7: F45, 8: E3, 9: E6\}$

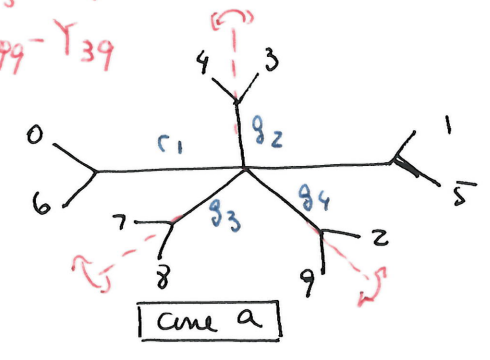
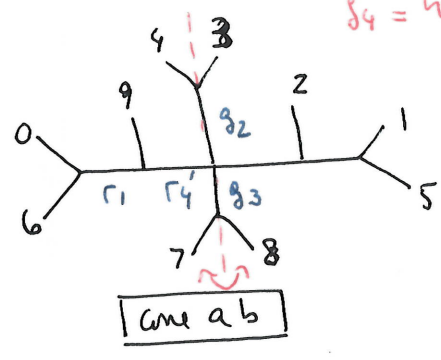
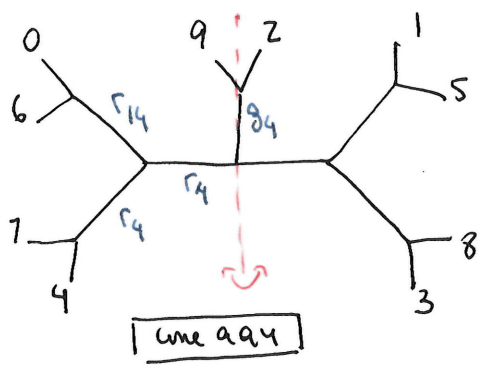
# Extremal G6



$$\delta_2 = \text{loss}_{66} - \gamma_{38}$$

$$\delta_3 = \text{loss}_{73} - \gamma_{39}$$

$$\delta_4 = \text{loss}_{99} - \gamma_{39}$$



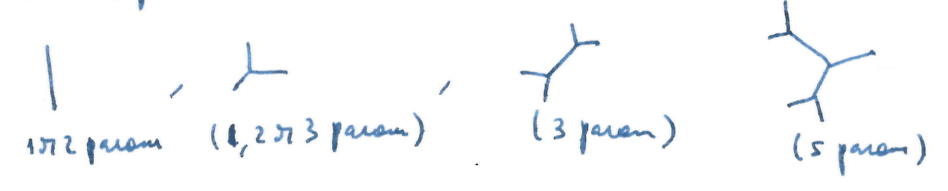
- { 0:F16, 1:E1, 2:E3, 3:F56, 4:ES, 5:E2, 6:F26, 7:E4, 8:F46, 9:F36 }

Notation: Length of edges in terms of scalars for 2 max cones orbit representatives of the Naruki fan (lower dim'd cones are obtained by setting suitable scalars to 0) & parameters  $\delta_0, \dots, \delta_4$  where  $\delta_i = \text{True val}(\text{loss}_{\square}) - \text{Exp Val}(\text{loss}_{\square}) \geq 0$  &  $\text{loss}_{\square} = i^{\text{th}}$  entry in 5-tuple of loss functions associated to each extremal.

For a a2 a3 a4 ( $\Delta$  faces):  $r_1 a + r_2 a_2 + r_3 a_3 + r_4 a_4$   $r_1, r_2, r_3, r_4 \geq 0$

For a a2 a3 b (—):  $r_1 a + r_2 a_2 + r_3 a_3 + r_4 b$   $r_1, r_2, r_3, r_4 \geq 0$

Conclusion: There are various non-expected combinatorial types & all trees have a symm. with respect to a top. line

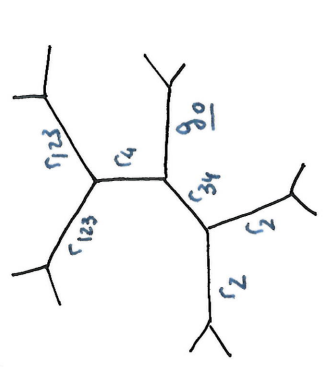


Cones:

	E1, E2, F13, F23,		F14, F15, F24, F25
	E3, F12		F46, F56, G4, G5
	E4, E5		F35, F39
	E6		F36
	F16, F26, G1, G2		F45, G6
			G3

Summary of combinatorial types + lengths for non-generic cases in  $aa_2a_3a_4$  case & faces.

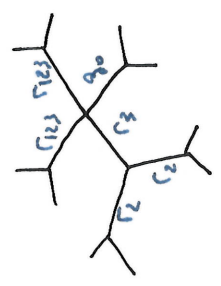
$aa_2a_3a_4$



$EG$

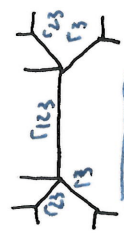
Root: generic, so 24

$aa_2a_3$

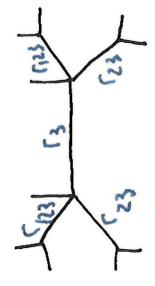


$EG$

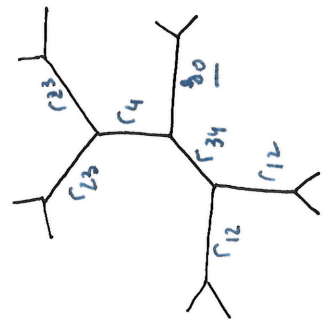
Root: generic so



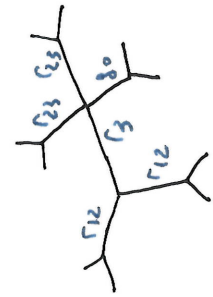
$F16, F26$   
 $G1, G2$



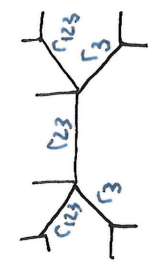
$E4, E5, F34, F35$



$F36$



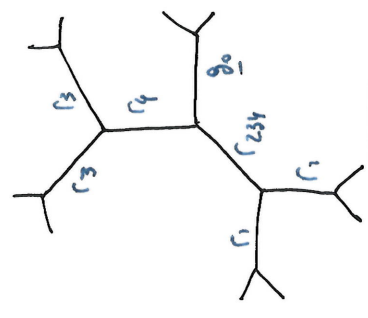
$F36$



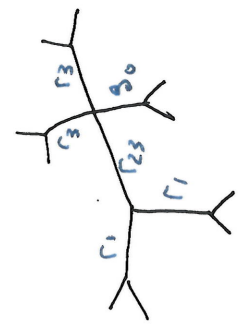
$E3, F12$   
 $F45, G6$



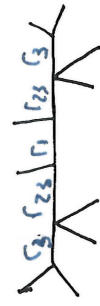
$F46, F56, G4, G5$



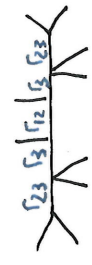
$G3$



$G3$



$E1, E2, F13, F23$



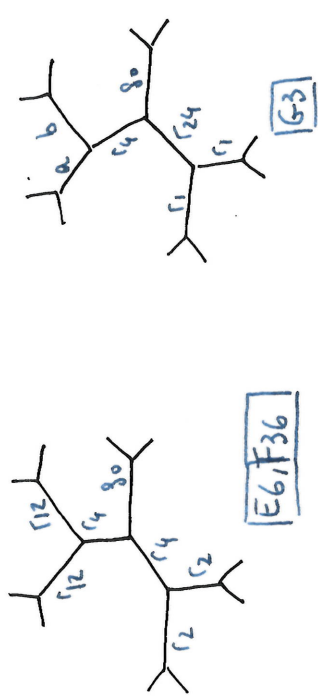
$F14, F15, F24, F25$

$g_0 = 60037 - 134$

$g_0 = 60037 - 134$

$a = \text{LW20}_{28} - Y_{28}$   
 $b = \text{LW20}_{15} - \text{Exp}$   
 $g_0 = \text{LW20}_{37} - Y_{34}$

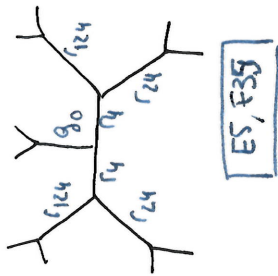
$c = \text{LW20}_{123} - Y_{39}$   
 $d = \text{LW20}_{51} - Y_{39}$   
 $g_0 = \text{LW20}_{37} - Y_{34}$



E6, F36

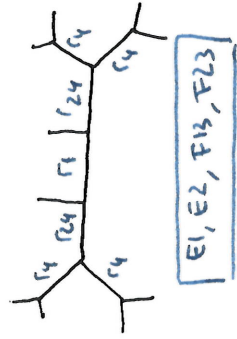
G3

E4, F34

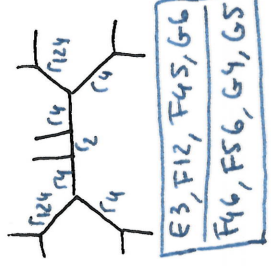


E5, F35

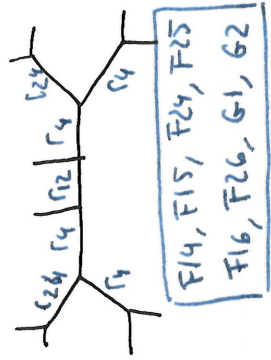
Rest: generic so



E1, E2, F13, F23

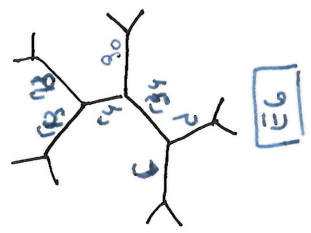


E3, F12, F45, G6  
F46, F56, G4, G5

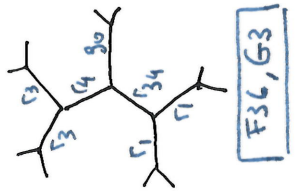


F14, F15, F24, F25  
F16, F26, G1, G2

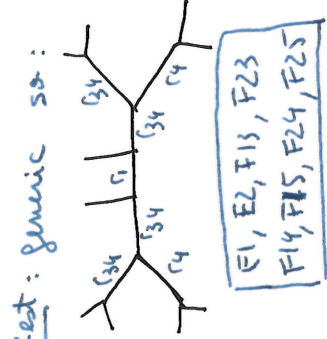
Q Q 3 a 4



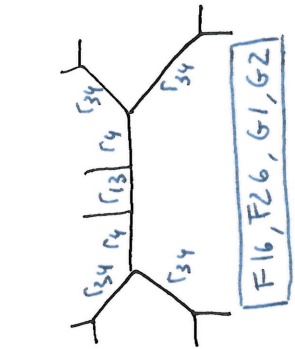
E6



F36, G3

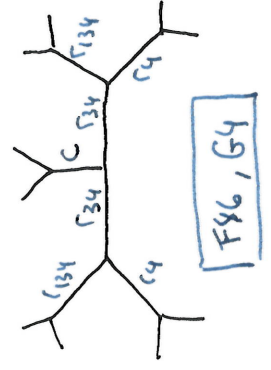


E1, E2, F13, F23  
F14, F15, F24, F25

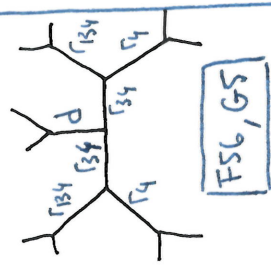


F16, F26, G1, G2

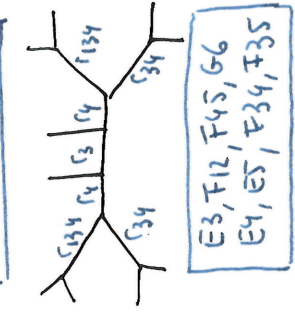
Rest: generic so:



F46, G4

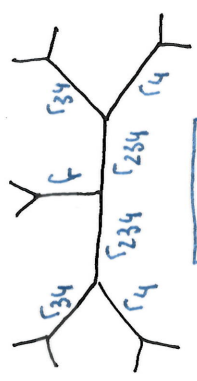


F56, G5



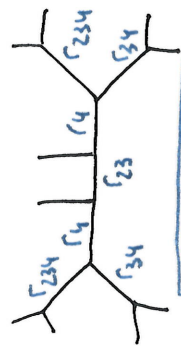
E3, F12, F45, G6  
E4, E5, F34, F35

020304

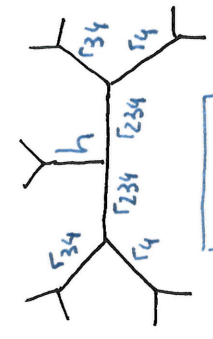


E1, F13

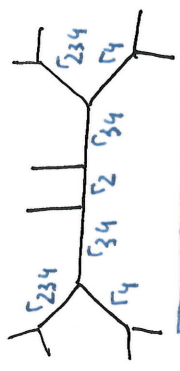
Rest: generic, so:



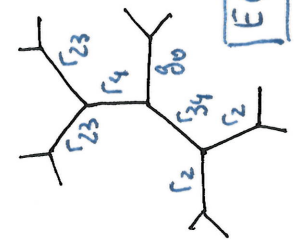
E3, F12, F45, G6  
F16, F26, G1, G2



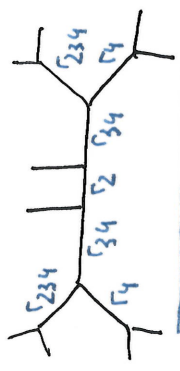
E2, F23



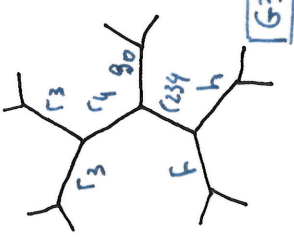
F14, F15, F24, F25  
F46, F56, G4, G5



E6, F36



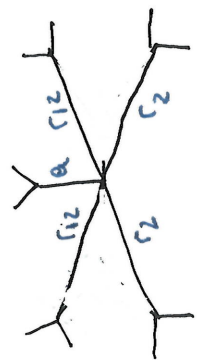
F14, F15, F24, F25  
F46, F56, G4, G5



G3

f = h00018 - T35  
h = h00105 - T35  
g0 = h00137 - T34

002

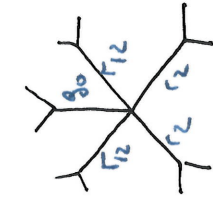


E4, F34

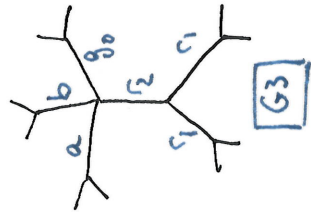
Rest: generic, so



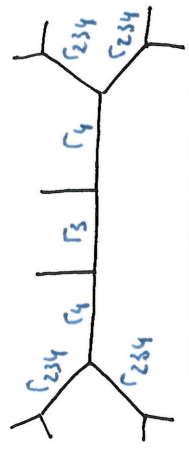
E1, E2, F13, F23



E6, F36

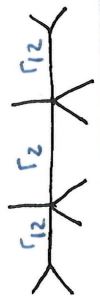


G3



E4, E5, F34, F35

a = h00228 - T28  
b = h00115 - EXP  
g0 = h00137 - T34

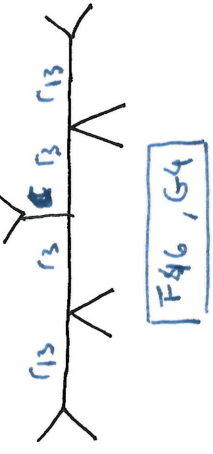


E3, F12, F45, G6  
F46, F56, G4, G5

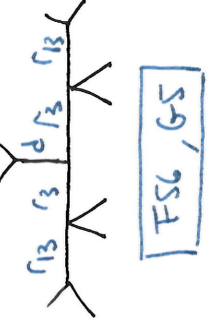


F14, F15, F24, F25  
F16, F26, G1, G2

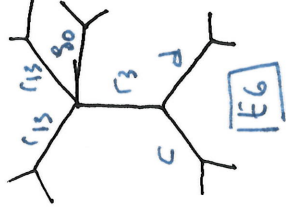
A03



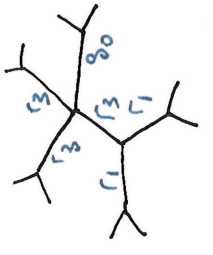
F46, G4



F56, G5



E6



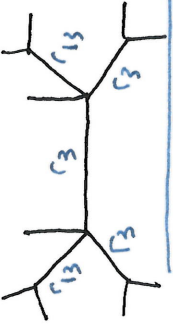
F36, G3

$d = \text{hars}_{1-39}$   
 $c = \text{hars}_{123-39}$   
 $g_0 = \text{hars}_{37-39}$

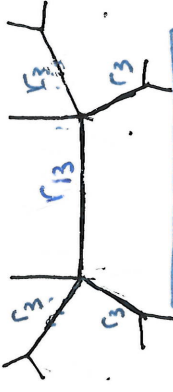
Rest: generic, so



E1, E2, F13, F23  
 F14, F15, F24, F25

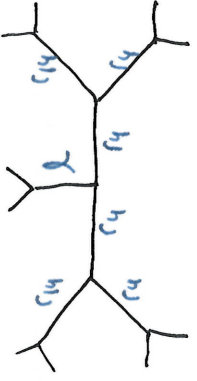


E3, F12, F45, G6  
 E4, ES, F34, F35

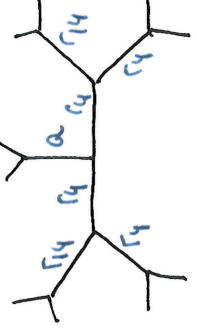


F16, F26, G1, G2

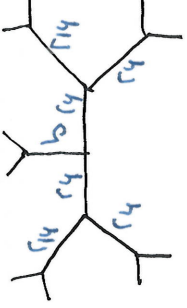
A04



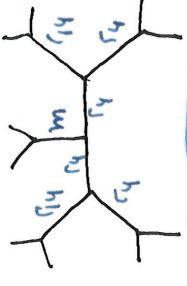
E3, G6



E4, F34



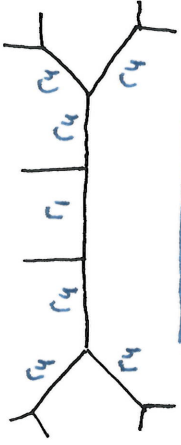
ES, F35



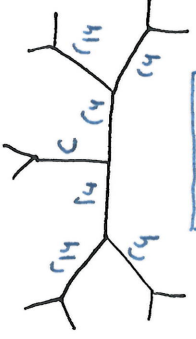
F12, F45

$l = \text{hars}_{99-139}$   
 $a = \text{hars}_{28-125}$   
 $b = \text{hars}_{15-148}$   
 $m = \text{hars}_{97-138}$   
 $c = \text{hars}_{23-139}$   
 $d = \text{hars}_{51-139}$   
 $g_0 = \text{hars}_{37-134}$

Rest: generic so



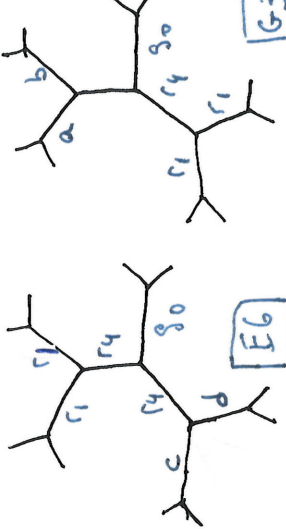
E1, E2, F13, F23  
 F14, F15, F24, F25  
 F16, F26, G1, G2



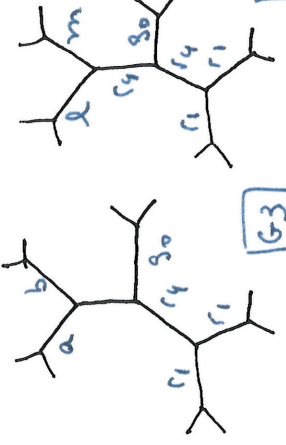
F46, G4



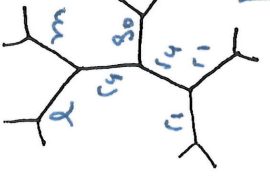
F56, G5



E6



G3

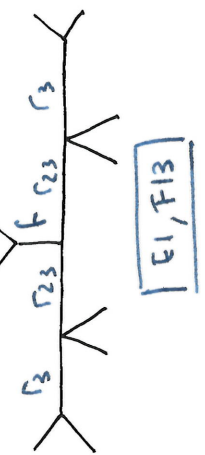
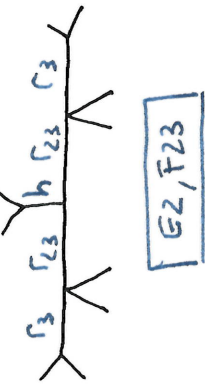
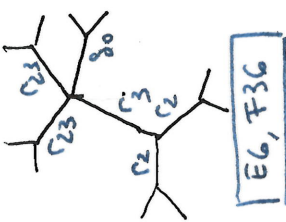
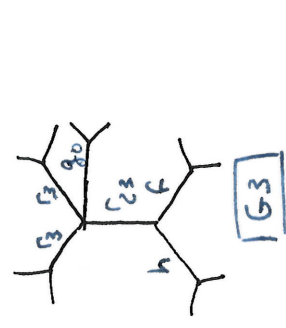


F36

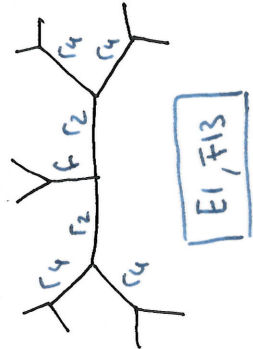
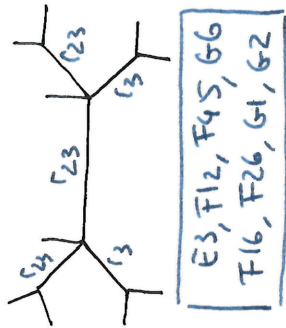


f = 6000 78 - Y<sub>35</sub>  
 h = 6000 105 - Y<sub>35</sub>  
 j<sub>0</sub> = 6000 37 - Y<sub>35</sub>

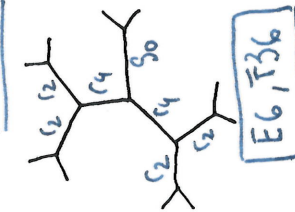
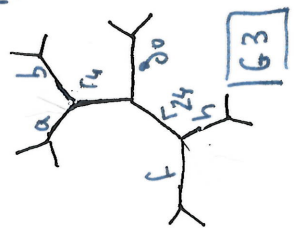
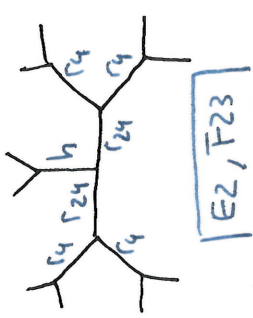
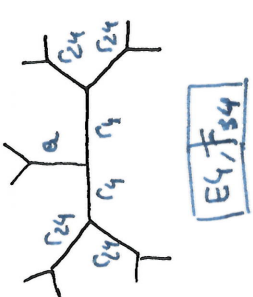
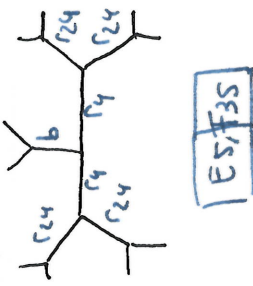
f = 6000 78 - Y<sub>35</sub>  
 h = 6000 105 - Y<sub>35</sub>  
 a = 6000 28 - Y<sub>28</sub>  
 b = 6000 15 - EXP  
 g<sub>0</sub> = 6000 37 - Y<sub>34</sub>



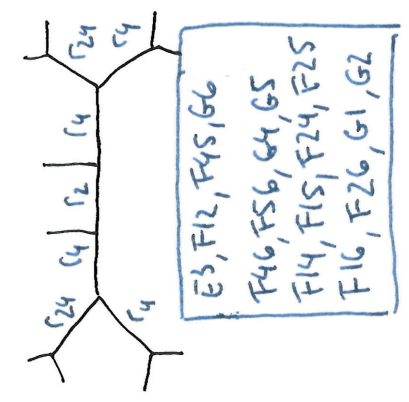
Rest: generic, so



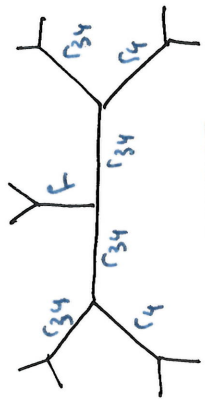
Rest: generic, so



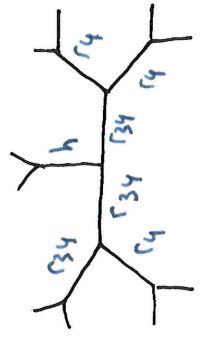
Rest: generic, so



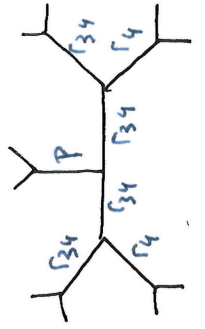
Q304



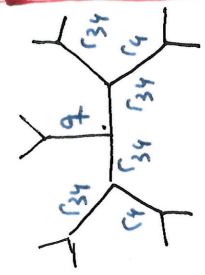
E1, F13



E2, F23

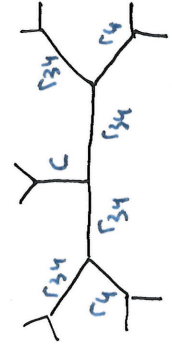


F14, F25

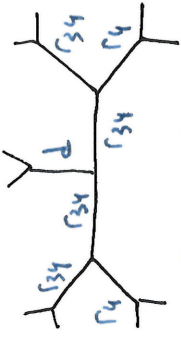


F15, F24

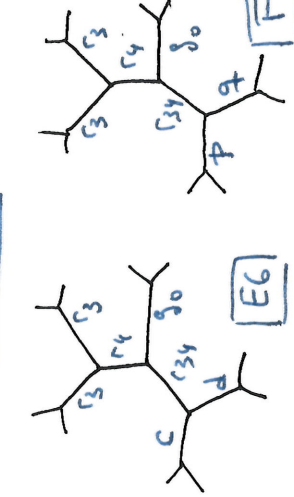
f = hwa<sub>78</sub>-Y<sub>35</sub>  
h = hwa<sub>105</sub>-Y<sub>35</sub>  
p = hwa<sub>120</sub>-Y<sub>36</sub>  
q = hwa<sub>41</sub>-Y<sub>36</sub>  
c = hwa<sub>123</sub>-Y<sub>39</sub>  
d = hwa<sub>51</sub>-Y<sub>39</sub>  
s = hwa<sub>37</sub>-Y<sub>32</sub>



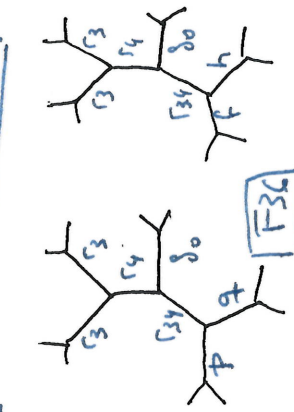
F46, G4



F56, G5



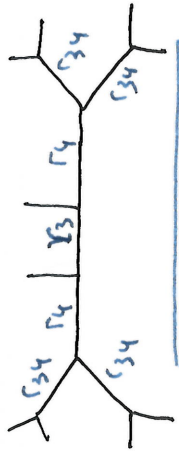
E6



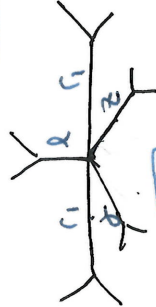
F36

G3

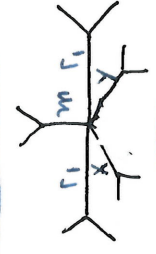
Rest: generic, so



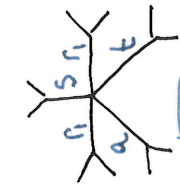
E3, F12, F45, G6  
E4, E5, F34, F35  
F16, F26, G1, G2



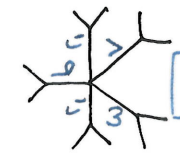
E3



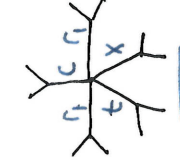
F12



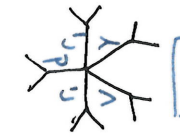
E4



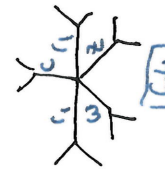
E5



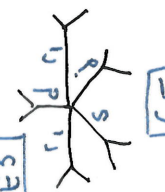
F46



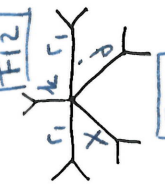
F56



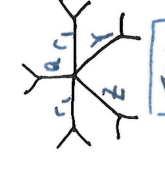
G4



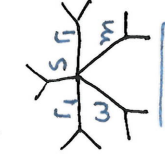
G5



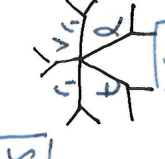
F35



F34



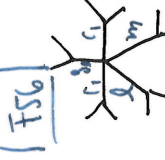
F45



G6

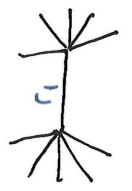


E6

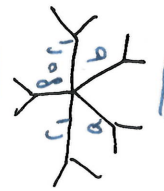


F36

Rest: generic, so



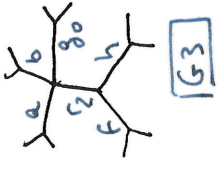
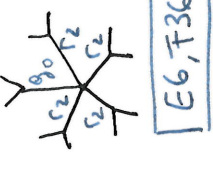
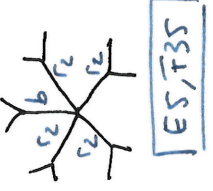
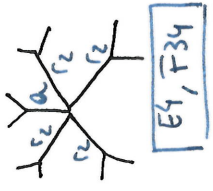
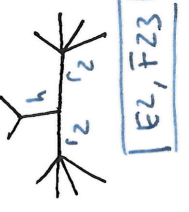
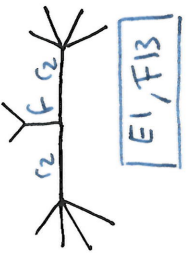
E1, E2, F13, F23  
F14, F15, F24, F25  
F16, F26, G1, G2



G3

s = hwa<sub>37</sub>-Y<sub>32</sub>  
t = hwa<sub>73</sub>-Y<sub>39</sub>  
v = hwa<sub>66</sub>-Y<sub>38</sub>  
w = hwa<sub>76</sub>-Y<sub>38</sub>  
b = hwa<sub>15</sub>-E<sub>AP</sub>  
x = hwa<sub>81</sub>-Y<sub>33</sub>  
c = hwa<sub>123</sub>-Y<sub>39</sub>  
d = hwa<sub>51</sub>-Y<sub>39</sub>  
y = hwa<sub>57</sub>-Y<sub>32</sub>  
z = hwa<sub>102</sub>-Y<sub>39</sub>

Q2

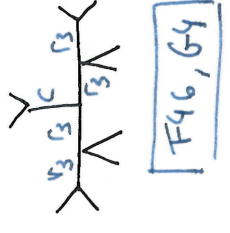
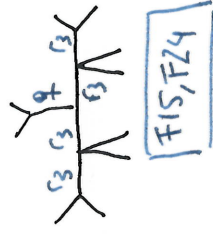
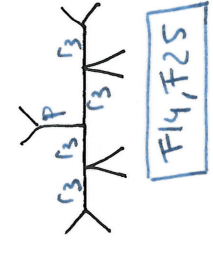
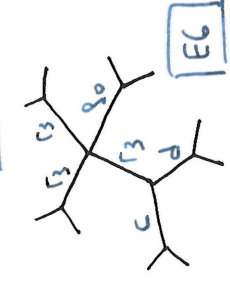
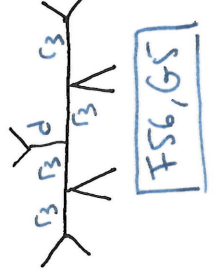
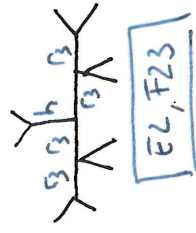
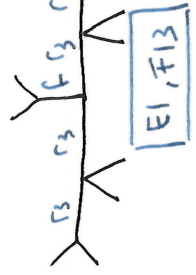


Rest: generic, so

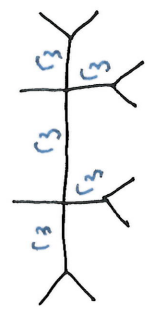


E3, F12, F45, G6  
F46, F56, G4, G5  
F14, F15, F24, F25  
F16, F26, G1, G2

Q3



Rest: generic, so

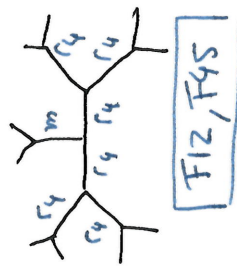


E3, F12, F45, G6  
E4, E5, F34, F35  
F16, F26, G1, G2

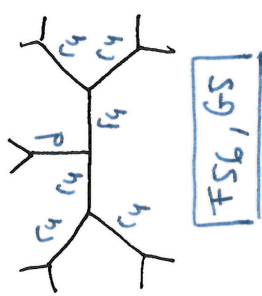
f = hours<sub>78</sub> - Y<sub>35</sub>  
h = hours<sub>105</sub> - Y<sub>35</sub>  
a = hours<sub>28</sub> - Y<sub>28</sub>  
b = hours<sub>15</sub> - Exp  
g = hours<sub>37</sub> - Y<sub>34</sub>

f = hours<sub>78</sub> - Y<sub>35</sub>  
h = hours<sub>105</sub> - Y<sub>35</sub>  
p = hours<sub>120</sub> - Y<sub>36</sub>  
q = hours<sub>41</sub> - Y<sub>36</sub>  
c = hours<sub>123</sub> - Y<sub>39</sub>  
d = hours<sub>51</sub> - Y<sub>39</sub>  
g0 = hours<sub>37</sub> - Y<sub>34</sub>

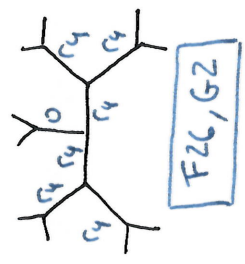
- f =  $\text{Lors}_{78} - \text{Y}_{35}$
- h =  $\text{Lors}_{105} - \text{Y}_{35}$
- l =  $\text{Lors}_{99} - \text{Y}_{39}$
- m =  $\text{Lors}_{97} - \text{Y}_{38}$
- a =  $\text{Lors}_{28} - \text{Y}_{28}$
- b =  $\text{Lors}_{15} - \text{Exp}$
- c =  $\text{Lors}_{123} - \text{Y}_{39}$
- d =  $\text{Lors}_{51} - \text{Y}_{39}$
- p =  $\text{Lors}_{120} - \text{Y}_{36}$
- q =  $\text{Lors}_{41} - \text{Y}_{36}$
- i =  $\text{Lors}_{45} - \text{Y}_{38}$
- o =  $\text{Lors}_{110} - \text{Y}_{36}$
- so =  $\text{Lors}_{37} - \text{Y}_{34}$



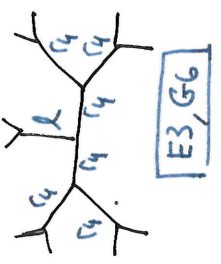
FIZ, F4S



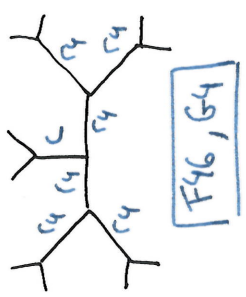
FSL, GS



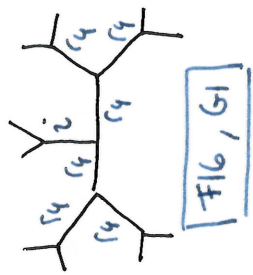
FZL, GZ



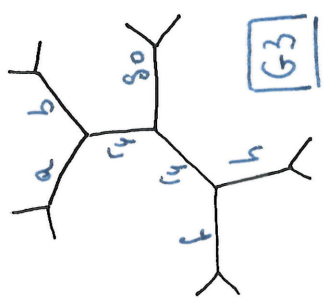
E3, G6



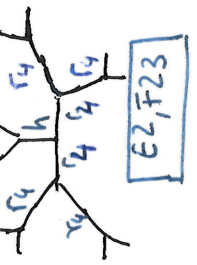
F4G, G4



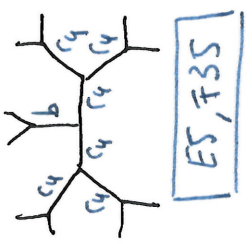
F1G, G1



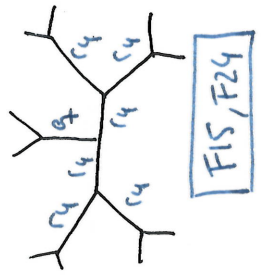
G3



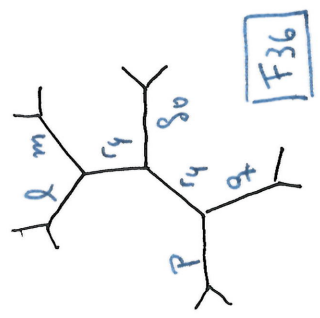
E2, F23



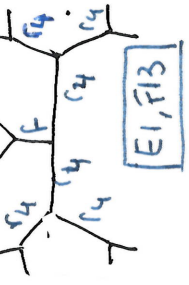
E5, F35



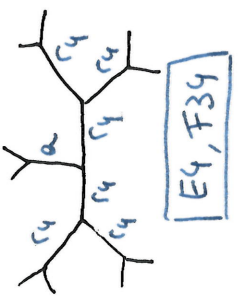
FIS, F24



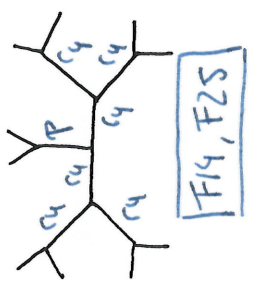
F36



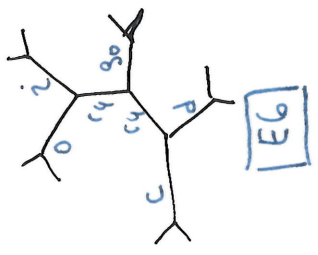
E1, F13



E4, F34



F14, F25



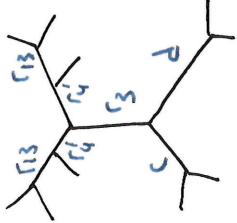
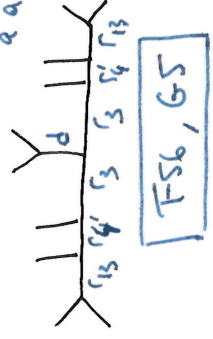
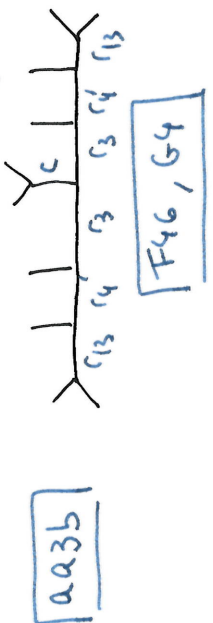
E6

E4

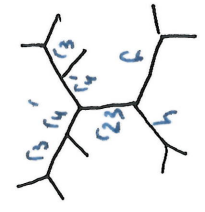
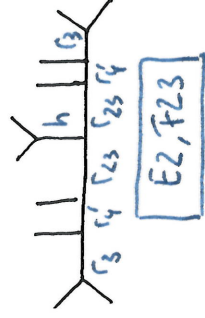
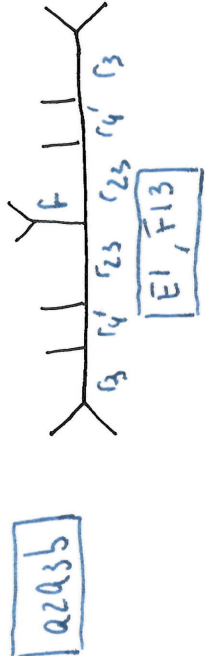
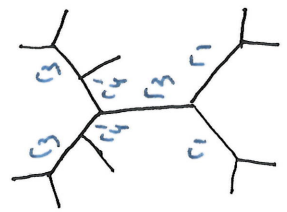
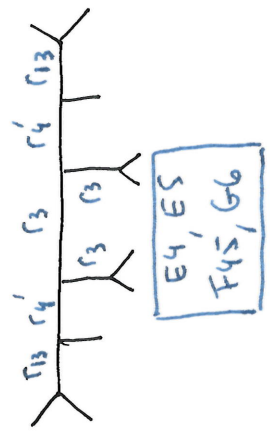
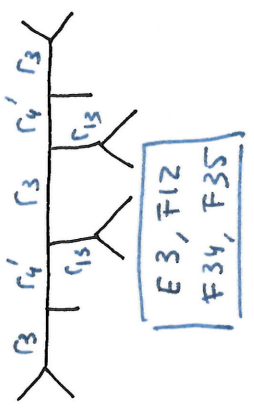
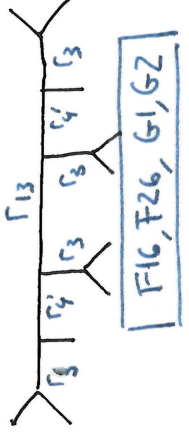
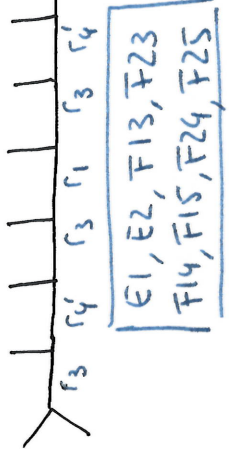
Summary of combinatorial types + lengths for non-generic cases in aazab3b cmc & its facs

**aazab3b** all generic! Only need to consider cases:  $\wedge$  aazab, azb, a3b, b.

$c = \text{loop}_{1,2,3} - T_{39}$   
 $d = \text{loop}_{5,1} - T_{39}$

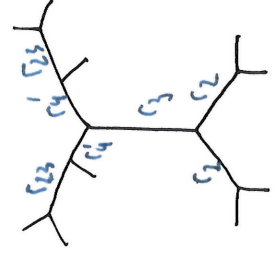
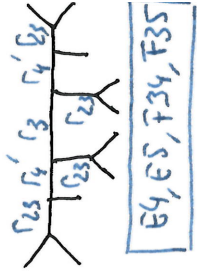
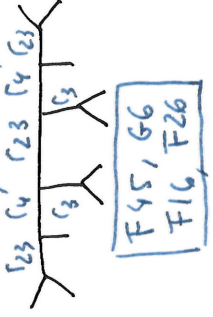
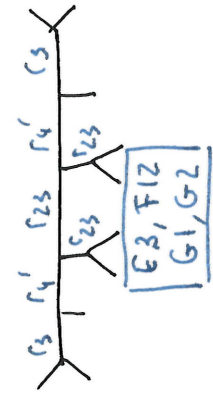
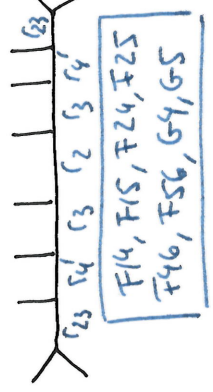


Rest, generic so

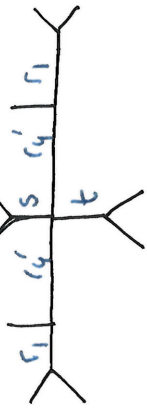


$f = \text{loop}_{78} - T_{35}$   
 $h = \text{loop}_{105} - T_{35}$

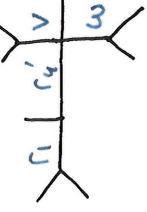
Rest, generic so



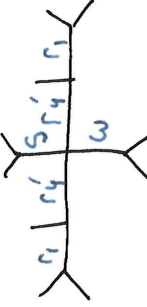
[ab]



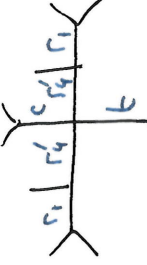
[E4]



[E5]

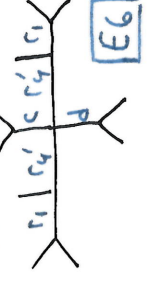


[F45]

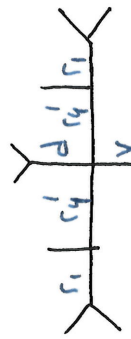


[F46]

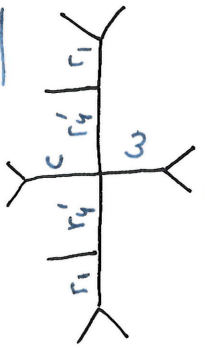
- s = hwa<sub>3</sub> - Y38
- t = hwa<sub>73</sub> - Y39
- v = hwa<sub>66</sub> - Y38
- w = hwa<sub>76</sub> - Y38
- c = hwa<sub>123</sub> - Y39
- d = hwa<sub>51</sub> - Y39



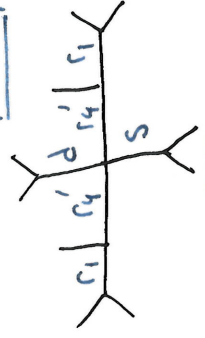
Rest: generic, so



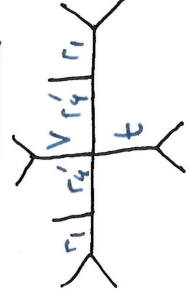
[F56]



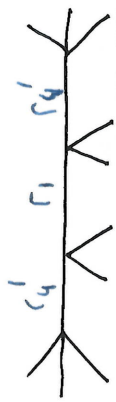
[G4]



[G5]

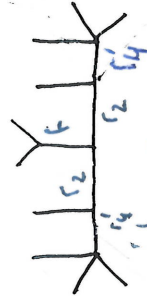


[G6]

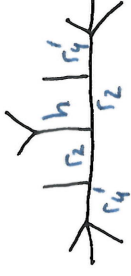


E1, E2, F13, F23  
F16, F26, G1, G2  
F14, F15, F24, F25

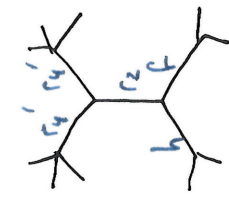
[a2b]



[E1, F13]



[E2, F23]

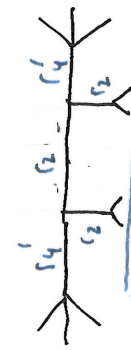


[G3]

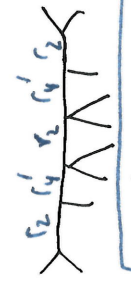


E3, F12, F34, F35  
F36, G3

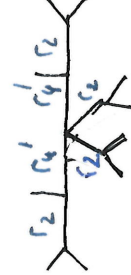
Rest: generic, so



E3, F12  
G1, G2



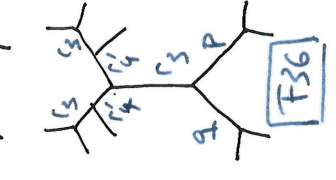
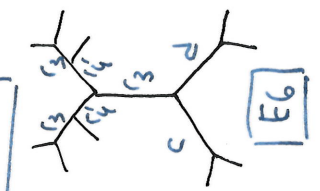
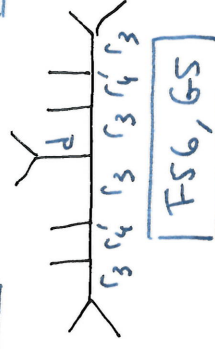
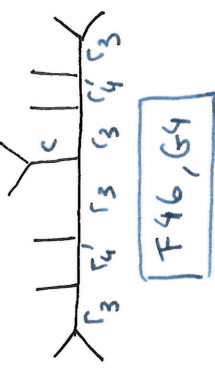
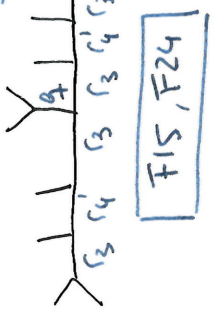
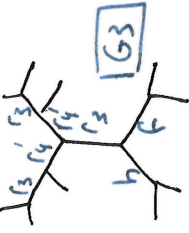
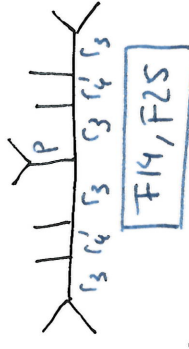
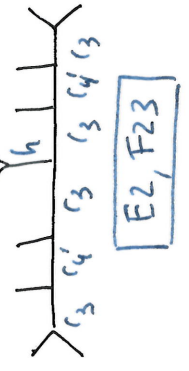
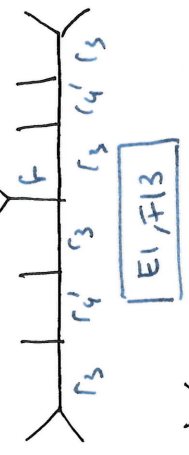
F45, G6  
F46, F56, G4, G5  
F14, F15, F24, F25  
F16, F26



E4, E5, F34, F35, E6, F36

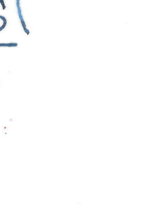
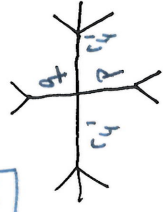
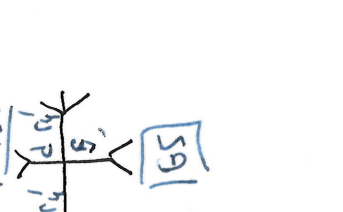
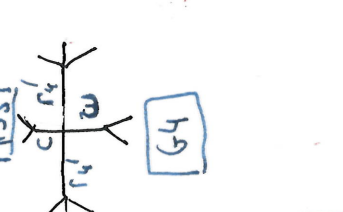
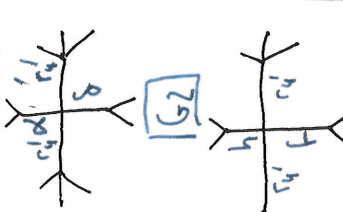
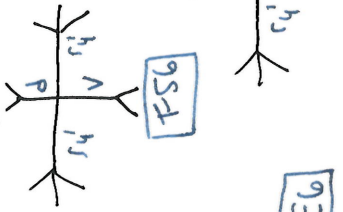
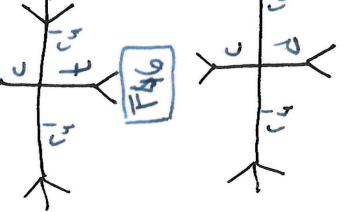
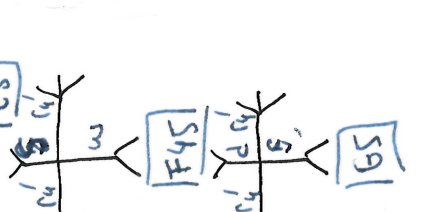
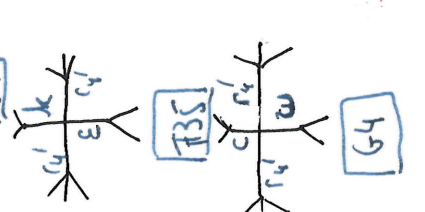
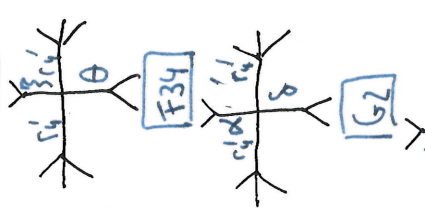
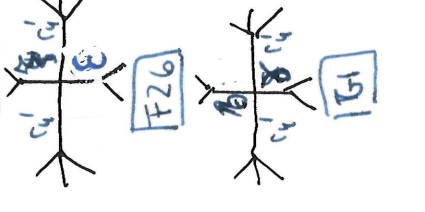
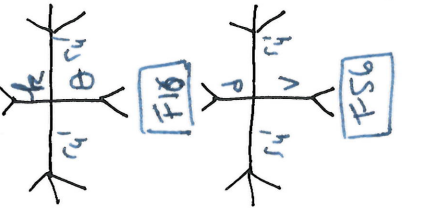
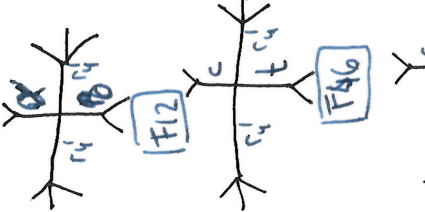
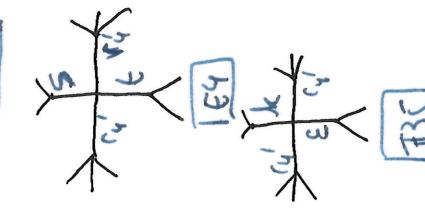
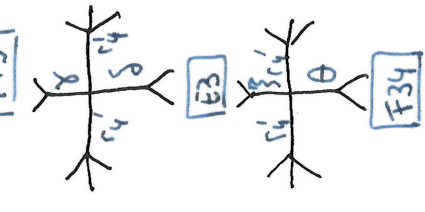
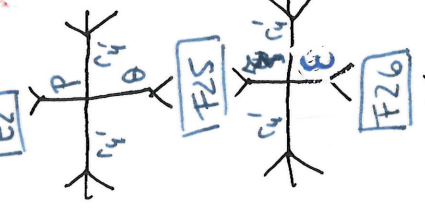
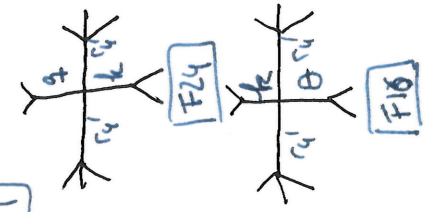
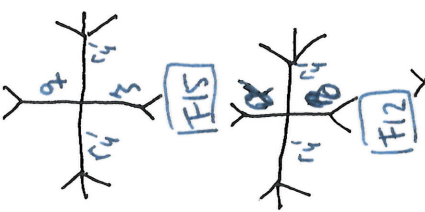
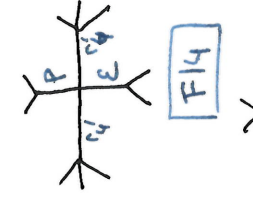
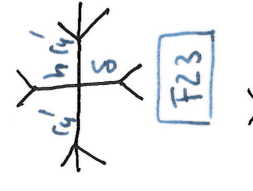
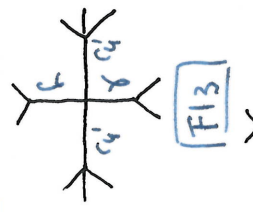
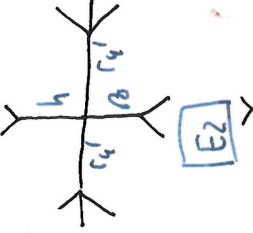
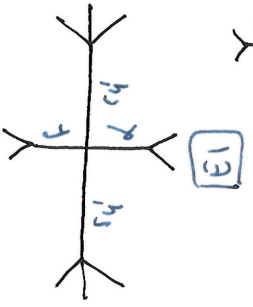
- f = hwa<sub>19</sub> - Y35
- h = hwa<sub>105</sub> - Y35

a3b



Rest: generic, so

E3, F12, F45, G6  
E4, E5, F34, F35  
F16, F26, G1, G2



F = hars - Y35  
h = hars - Y3  
P = hars - Y3  
g = hars - Y36  
c = hars - Y3  
d = hars - Y39

o = hars - Y36  
d = hars - Y39  
c = hars - Y39  
f = hars - Y35  
alpha = hars - Y37  
h = hars - Y35  
beta = hars - Y38  
gamma = hars - Y39  
delta = hars - Y38  
epsilon = hars - Y35  
zeta = hars - Y3  
eta = hars - Y36  
theta = hars - Y36  
iota = hars - Y39  
kappa = hars - Y38  
lambda = hars - Y38  
mu = hars - Y38  
nu = hars - Y38  
xi = hars - Y38  
omicron = hars - Y38  
pi = hars - Y38  
rho = hars - Y38  
sigma = hars - Y38  
tau = hars - Y38  
upsilon = hars - Y38  
phi = hars - Y38  
chi = hars - Y38  
psi = hars - Y38  
omega = hars - Y38