Math 101 (03): Homework #15

due Thursday, Dec.9

For each of the following problems do the following.

(a) Show that the families of curves are orthogonal.

(b) Sketch both families of curves on the same axes. (Hint: Pick one curve and sketch it for one value of the parameter. Then figure out what happens when the parameter varies.)

1. $x^2 + y^2 = ax$ and $x^2 + y^2 = by$

2. $y = ax^x$ and $x^2 + 2y^2 = b$

3. $y = ax^3$ and $x^2 + 3y^2 = b$