Math 101 (03): Homework #14

due Tuesday, Dec.7

All even problems from Chapter 11 (pages 100-104).

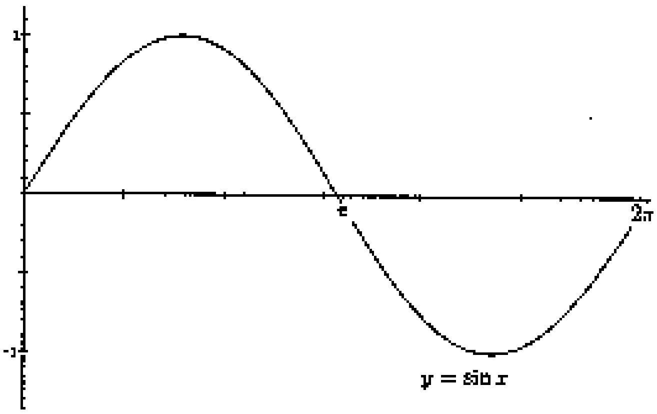
Given the mileage $f(t)$, compute the velocity and acceleration.

2. $f(t) = e^t \sin t$

4. $f(t) = t^2 e^t (\sin t) \ln(t^2 + 1)$

6. Compute the first four derivatives $y = x^4 \sin x$

8. For the following graph $y = f(x)$, where are $f'(x)$ and $f''(x)$ positive and negative?



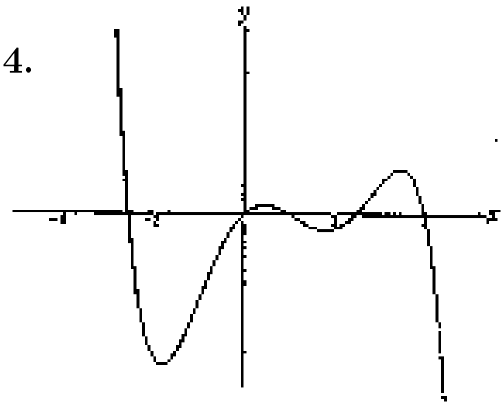
Sketch the graphs of $y = f(x)$.

10. $y = 3x + 2$

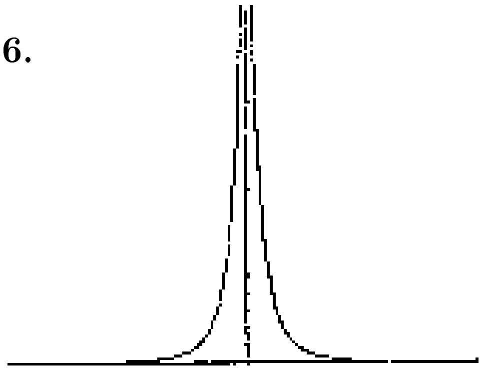
12. $y = x^2 - 4x + 2$

Label absolute and relative (= local) maxima and minima and points of inflection.

14.



16.



Sketch the graphs of $y = f(x)$. Label relative maxima and minima and inflection points.

18. $y = \dfrac{x-2}{x-5}$ (Note the horisontal asymptote $y = 1$, approached as $x \to \pm\infty$.)

20. $y = x^4 - 2x^2 + 1$

22. $y = \dfrac{x^2}{x-4}$

24. $y = xe^x$

26. $y = x^3 - 6x^2 + 9x$

28. $y = x + \dfrac{1}{x-2}$, given that $y' = \dfrac{(x-1)(x-3)}{(x-2)^2}$, $y'' = \dfrac{2}{(x-2)^3}$.