1. (a) $e \cdot x^{e-1} + e^x + x^x \, (\ln x + 1)$

   (b) $\dfrac{1}{1+t^2}$ (This one simplifies a lot!)

   (c) (i) $2x \sin \dfrac{1}{x} - \cos \dfrac{1}{x}$ (ii) 0

2. (a) $-\infty$ (b) $\dfrac{\sqrt{5}}{2}$ (c) -2

3. $m = -\dfrac{3}{2}$

4. (a) $y = -17x + 35$ (b) 1.988

5. (a) DNE (b) 2 (c) 5 (d) 2 (e) 0

6. $\dfrac{dh}{dt} = \dfrac{19}{13}$ ft/sec

7. $y = 1$ and $y = \dfrac{3}{2}x - 2$

8. (a) No horizontal asympototes.

   (b) $x = -1$ is a vertical asymptote.

   (c) Local max at $x = -3$, Neither at $x = 0$.

   (d) Inflection point at $(0,0)$. Concave up on the interval $(0,\infty)$.