Fall 2005 Math 151
Week in Review - Solutions

1. a.) $f'(t) = \dfrac{-\sin(\ln t)}{t}$

   b.) $h'(x) = \dfrac{1}{x \ln x}$

   c.) $f'(x) = 3x^2 \ln(2x+1) + \dfrac{2x^3}{2x+1}$

   d.) *Use properties of logarithms to simplify the expression.*

   $y' = \dfrac{x}{x^2+1} - \dfrac{3}{2(3x-5)}$

   e.) $f'(x) = \dfrac{-3x^2}{(3-x^3)\ln 2}$

   f.) $f'(x) = \ln 9 \sec^2(2x) 3^{\tan 2x}$

   g.) $y' = x^{\sin x}(\cos x \ln x + \dfrac{\sin x}{x})$

2. $y = 3x - e^2$

3. $m = \dfrac{\ln 2}{4}$

4. a.) $y(t) = 4000(9^t)$

   b.) 8320 bacteria

   c.) $t \approx 43.95$ minutes

5. 121.9 mg

6. $y = 5e^{2t}$

7. $y(2) \approx 8.26^\circ$

8. a.) Approximately 301.64 kg of salt

   b.) approximately 30.41 minutes.

9. a.) $\dfrac{\pi}{6}$

   b.) $\dfrac{\pi}{4}$

   c.) $-\dfrac{\pi}{3}$

   d.) $\dfrac{\pi}{3}$

   e.) $\dfrac{3}{5}$

   f.) $\dfrac{1}{\sqrt{1+x^2}}$

   g.) $\dfrac{2\pi}{3}$

   h.) $-\dfrac{\pi}{4}$

   i.) 0.4

   j.) $-\dfrac{\pi}{6}$

   k.) $\dfrac{3\pi}{4}$

   l.) $\dfrac{2\sqrt{8}}{9}$

10. $y' = \dfrac{1}{2\sqrt{x}(1+x)}$

11. $y - \dfrac{\pi}{6} = \dfrac{\sqrt{3}}{3}(x-1)$

12. $0 \le x \le 1$, all real numbers.

13. $\dfrac{\pi}{2}$