Spring 2012 Math 151

Week in Review # 5
sections: 3.5, 3.6, 3.7
courtesy: Joe Kahlig

1. $f'(x) = -24x(4 - 3x^2)^3$

2. $f'(x) = \dfrac{\sec^2 \sqrt{x}}{2\sqrt{x}}$

3. $f'(x) = 2x\sqrt{2x^3 + 1} + \dfrac{3x^4}{\sqrt{2x^3 + 1}}$

4. $f'(t) = 6\sin^2(2t - 1)\cos(2t - 1)$

5. $f'(x) = 2x\sec(5 - 4x^4) - 16x^5\sec(5 - 4x^4)\tan(5 - 4x^4)$

6. $y' = 4\left(\dfrac{x^3 + 5}{x^4 + 7}\right)^3 * \dfrac{3x^2(x^4 + 7) - 4x^3(x^3 + 5)}{(x^4 + 7)^2}$

7. $h'(x) = \dfrac{-3x^2}{(x^3 + 5)\sqrt{x^3 + 5}}$

8. $y' = 8x(x^2 + 1)^3(6 - 2x)^3 - 6(x^2 + 1)^4(6 - 2x)^2$

9. $y - 160 = -80(x - 2)$

10. $H'(0) = -5$

11. $J'(\sqrt{3}) = -2\sqrt{3}$

12. $K'(1) = 702$

13. Find $\dfrac{dy}{dx} = \dfrac{4x^3 - 8xy^2}{8x^2y - 3y^2}$

14. Find $\dfrac{dy}{dx} = \dfrac{-x}{y}$

15. Find $\dfrac{dx}{dy} = \dfrac{-x\cos(y) - 2y\sin(y^2)}{\sin(y) - 2\sin(2x)}$

16. Find $\dfrac{dx}{dy} = \dfrac{3y^2 - 8xy}{4y^2 + 8x}$

17. $y - 8 = -4(x - 1)$

18. $\left\langle \dfrac{-2}{\sqrt{85}}, \dfrac{9}{\sqrt{85}} \right\rangle$

19. vector equation: $\mathbf{L_{tan}(t)} = \langle 12 + 14t, 3 + 4t \rangle$
    parametric equation: $x(t) = 12 + 14t,\ y(t) = 3 + 4t$

20. $\theta = \arccos\left(\dfrac{3}{5}\right) = 53.13^o$

21. (a) $\mathbf{v}(3) = <5, 24>$ and speed $= 24.515$ m/s
    (b) 36.3456 m/s