Spring 2012 Math 151

Week in Review # 4

sections: 3.2, 3.3, 3.4

courtesy: Joe Kahlig

1. $y' = 0$
2. $y' = 3x^2 + 5$
3. $y' = \frac{3}{4}x^{\frac{-1}{4}} + 2.5x^{1.5} - 1$
4. $y' = 8x^7 + 12x^5 + 28x^3 + 15x^2$
5. $y' = \frac{-35}{3}x^{-6}$
6. $y = 7x - 5x^{-1} + 2x^{-2}$
   $y' = 7 + 5x^{-2} - 4x^{-3}$
7. $y' = \frac{x^4 - 15x^2 - 4x}{(x^2-5)^2}$
8. $y' = \frac{x^3 * f'(x) - 3x^2 - 3x^2 * f(x)}{x^3}$
9. $y - \frac{14}{5} = \frac{21}{25}(x-2)$
10. $x = -4$, $x = 2$
11. $\left(\frac{2}{5}, 10\right)$ and $(-2, -2)$
12. $k'(x) = \begin{cases} 3x^2 - 2 & \text{if } x < 2 \\ 2x + 5 & \text{if } x > 2 \end{cases}$
13. $k'(x) = \begin{cases} 3x^2 - 10 & \text{if } x < 3 \\ 6x - 1 & \text{if } x > 3 \end{cases}$

    $k(x)$ is not continuous at $x = 3$, thus $k'(3)$ does not exists.
14. (a) at $x = 2$ and $x = 4$
    (b) $(0, 2) \cup (4, \infty)$
    (c) 44 meters
    (d) 36 meters
15. (a) $\frac{36}{5}$
    (b) $\frac{2}{5}$
    (c) 0
    (d) $\frac{2}{3}$
16. $y' = \sec(x)\tan(x) - \sin(x)$
17. $f'(x) = 4x^3\sin(x) + x^4\cos(x)$
18. $f'(x) = \frac{(1+\cos(x))\sec^2(x) + \tan(x)\sin(x)}{(1+\cos(x))^2}$
19. $y' = -\csc(x)\cot(x) + 5\csc^2(x)$
20. $y - 1 = 3\sqrt{3}(x - \frac{\pi}{3})$