

Spring 2012 Math 151

Week in Review # 6

sections: 3.8, 3.9, 3.10

courtesy: Joe Kahlig

1. $y'' = \frac{1}{(x^2 + 1)^{3/2}}$

2. $y' = \frac{x^2 + 2x}{(x + 1)^2}$

$$y'' = \frac{2}{(x + 1)^3}$$

$$y''' = \frac{-6}{(x + 1)^4}$$

3. $f'' = 6xg'(x^2) + 4x^3g''(x^2)$

4. $D^{25} \cos(4x) = -4^{25} \sin(4x)$

5. $a\left(\frac{\pi}{4}\right) = r''\left(\frac{\pi}{4}\right) = \langle 8, 0 \rangle$

6. $2x^2 - 5x + 6$

7. (a) $\frac{dy}{dx} = \frac{2}{3t^2 - 6t}$

(b) $\left.\frac{dx}{dy}\right|_{t=3} = 4.5$

(c) $\left.\frac{dy}{dx}\right|_{(3,-5)} = \frac{-2}{3}$

8. (a) $y = \frac{-3}{8}(x + 16)$

(b) $(-3, -3)$

(c) $(0, 0)$ and $(-27, 9)$

9. $-12 \text{ ft}^2/\text{sec}$

10. $\frac{dy}{dt} = \frac{-90\sqrt{3}}{18\sqrt{7}}$

11. $7.3846 \text{ ft}/\text{sec}$

12. $\frac{-\sqrt{2}}{10}$ radians per sec

13. $0.1532 \text{ ft}/\text{min}$