Math 116 Practice Final Answers

2)

a) $\left(6\sqrt{3}, -6\right)$

b) $\left(-2\sqrt{2}, -\frac{\pi}{4}\right)$ is one possible answer

3) a) $8x\ln(3x) + 4x$

b) $\dfrac{\pi e^{\arctan \pi x}}{1+\pi^2 x^2}$

4)

a) $t = 1$

b) $y - 1 = -\dfrac{1}{10\ln(10)}(x - 10)$

5)

a) $9\sqrt{37}$

b) Frenemy (in terms of sheer money)

6) a) $\displaystyle\int_0^{\frac{\pi}{4}} \sqrt{(\frac{\sec(t)\tan(t) + \sec^2(t)}{\sec(t) + \tan(t)})^2 + \sec^2(t)}\ dt$

b) 1.

7) Divergent

8) b) $\theta = \dfrac{\pi}{3}$.

c) $\dfrac{1}{2}\left(\displaystyle\int_0^{\frac{\pi}{3}} (2 - \cos(\theta))^2\ d\theta + \int_{\frac{\pi}{3}}^{\frac{\pi}{2}} 9\cos^2(\theta)\ d\theta\right)$

9) a) $c = 1/2$

b) $R = 1/50$

10) a) No!

b) geometric series, $r = 8/3 \geq 1$

c) $27/5$

11) a) converges, ratio test.

b) diverges, divergence test

12) a) 0

b) $\dfrac{9}{2}e^{-6} + 3e^{-6}$

13) converges, integral test or comparison.