Answers (not solutuons) to the practice problems for the first exam in Math 135, Fall 2015

1. a) 1. b) $\frac{1}{2}$.
2. a) 8. b) Not continuous at $x = 3$.
3. Use $f(0) = 2 > 0$ and $f(1) = -2 < 0$ and the root location theorem.
4. a) $x, 1, 3$. b) $\frac{9}{8}$. c) $50 \ln 2$.
5. a) The tangent line: $y = 5x - 3$. The normal line: $y = -\frac{1}{5}x + \frac{11}{5}$. b) $x = \frac{1}{\sqrt{6}}$.
6. a) $\frac{(2 + \cos\theta + \theta \sin\theta - \sin\theta)}{(2 + \cos\theta)^2}$.

   b) $(6t + 12t^2 + 4t^3)e^{2t}$.

   c) $-(\sin(x + e^{2x}))(1 + 2e^{2x})$.
7. $a = -1$, $b = 5$ and $c = 0$. $f(x) = -x^2 + 5x$.
8. a) $A = 4000$, $k = \frac{(\ln 2)}{5}$. b) $Q(10) = 1000$.
9. a) $h(t) = -16t^2 + 48t + 160$. b) $t = 5$. c) 232.
10. a) $x = 1$. b) $x = 1, -2$. c) $x = 3$.