Chapter 2 Practice Test Part 1 (complete all problems)

#1 – 13: Use the appropriate technique to find the derivatives of the following functions.

1) $f(x) = 3x^2 - 5x + 4$

2) $f(x) = \frac{-3}{x^2}$

3) $f(x) = 2\sqrt[3]{x^2}$

4) $f(x) = \frac{5x^2+3}{x^2}$

5) $f(x) = (x^2 + 6x)(3x - 1)$

6) $f(y) = \frac{y^2}{3y-5}$

7) $f(t) = 2(4t - 3)^5$

8) $y = 4x^3(5x + 3)^2$

9) $f(x) = x^2 + 3x; \, at \, x = 2$

a) Find the slope of the tangent line to the graph of the function for the given value of x.
b) Find the equation of the tangent line to the graph of the function for the given value of x.

10) $f(x) = x^2 + 8x - 4$

a) Find all values of x where the tangent line is horizontal
b) Find the equation of the tangent line to the graph of the function for the values of x found in part a.

Chapter 2 Practice Test Part 2

11) $f(x) = e^{x^2}$

12) $f(y) = (2y - 4)e^{5y^2}$

13) $f(t) = \frac{t^4}{e^t}$

14) $f(t) = \ln(3t^5)$

15) $y = x^2 \ln(x)$

16) $f(x) = e^{x^2}$

a) Find all values of x where the tangent line is horizontal
b) Find the equation of the tangent line to the graph of the function for the values of x found in part a.

17) Suppose that the cost in dollars to make x super-sized candy bars is given by: $C(x) = \ln(x) + 0.15x$
a) Find C(4) (round to 2-decimals)
b) Interpret your answer to part a.
c) Create the marginal cost function $C'(x)$ for this product.
d) Find C'(4) (round to 2 decimals)
e) Interpret your answer to question part d.

18) A Corporation determines the weekly profit (P(x)) from selling certain widget in produces and sells:

$P(x) = -0.01x^2 + 20x - 2000 \ \ 0 \le x \le 1000.$

a) Find P(500)
b) Interpret your answer to part a. (round your answer to 2 decimals)
c) Create the marginal profit function $P'(x)$ for this product.
d) Find P'(500).
e) Interpret your answer to part d.