3.2 Higher Derivatives (Minimum Homework: 1, 3, 5, 9, 13, 15)

#1 – 6: For each function find the first second and third derivatives. Specifically find
a) $f'(x)$
b) $f''(x)$
c) $f'''(x)$

1) $f(x) = 12x^4 + 5x^3 + 3x^2 - 6x + 1$

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

3) $f(x) = -3x^3 + 6x^2 + 8x + 9$
4) $f(x) = -2x^4 + 3x^3 + 4x^2 - 2x - 1$

5) $f(x) = 3x^{-5}$

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

#7 – 18: For each function find the first and second derivatives. Specifically find
a) $f'(x)$
b) $f''(x)$

7) $f(x) = e^{2x+3}$ 8) $f(x) = e^{2x+5}$

9) $f(x) = e^{x^2}$ 10) $f(x) = e^{x^3}$

11) $f(x) = ln(2x)$ 12) $f(x) = ln(3x)$

13) $f(x) = ln(x^2)$ 14) $f(x) = ln(x^3)$

15) $f(x) = \frac{x+2}{x-3}$ 16) $f(x) = \frac{x+4}{x-5}$

17) $f(x) = \frac{2x}{x+8}$ 18) $f(x) = \frac{3x}{x-5}$