Homework Week 15 – Due on Friday Name: _____

"If opportunity doesn't knock, build a door." Milton Berle

1. Divide the following using synthetic division:
$$(6x^3 - 7x^2 - 17x - 14) \div (x - 2)$$

2. Divide the following using synthetic division:
$$(x^3 + 5x^2 - 9) \div (x + 2)$$

3. Divide the following using synthetic division:
$$(2x^4 + 5x^2 - 8) \div (x + 1)$$

4. Divide the following using your method of choice:
$$(5x^3 - 7x^2 - 18x - 14) \div (x - 2)$$

Tuesday: Transformations:

1. What is the result of a parent function $f(x) = |x|$ being shifted four units to the right and three units up?

2. What is the result of a parent function $f(x) = x^3$ being shifted four units to the left and a vertical stretch of 2?

3. What is the result of a parent function $f(x) = \sqrt{x}$ being shifted eight units to the left and a reflection over the x-axis?

4. What is the result of a parent function $f(x) = \frac{1}{x}$ being shifted 5 units to the left?

5. What is the result of a function $f(x) = |x - 4| + 8$ being shifted six units to the left?

Wednesday:

1. $2\log x + \log 2 = \log 98$

2. $log_4(10x + 4) = 3$

3. $log_7 6x = log_7(x + 15)$

4. $\log_7 64 - \log_7 x^2 = log_7 4$

5. $\log_3 9 + \log_3 x = 5$

Thursday:

1) Simplify: $\dfrac{x+6}{x^2-36}$

2) Divide: $\dfrac{x+7}{x^2+5x+6} \div \dfrac{x^2+7x}{x+3}$

3) Divide: $\dfrac{3}{x^2-9} \div \dfrac{2}{x+3}$

4) Multiply: $\dfrac{2x+6}{x^2+10x+25} \bullet \dfrac{x^2-25}{x^2+8x+15}$

5) Simplify: $\dfrac{x+1}{x^2-1}$