Name _____ Period_____ Date _____

Ms. Schmidt   Pre-Calculus

This is a weekly homework quiz that will be given every week and is due back the following Monday.

This quiz is due back: **January 2nd, 2018**

To receive full credit, all work must be shown. Any correct answer without work shown will receive only 1 point.

1) Find and list all zeros and linear factors of the function. $f(x) = x^4 - 8x^3 + 18x^2 + 20x - 112$

2) Determine the largest domain of the function $g(x) = \dfrac{2x+4}{\sqrt{4x-3}}$

3) Find the end behavior of the graph: $f(x) = -x(x - 2)^2(x + 2)^2$

4) Find the polynomial function given the roots: $\{0, \ 0, \ 3, \ -2 + i\sqrt{7}\}$

5) Rationalize the denominator: $\dfrac{2}{2+i\sqrt{3}}$

6) Graph the rational function by finding any vertical, horizontal and slant asymptotes, Any holes, x-intercept(s), y-intercept(s) and any additional points needed. $f(x) = \dfrac{x^3 - 9x}{3x^2 - 6x - 9}$
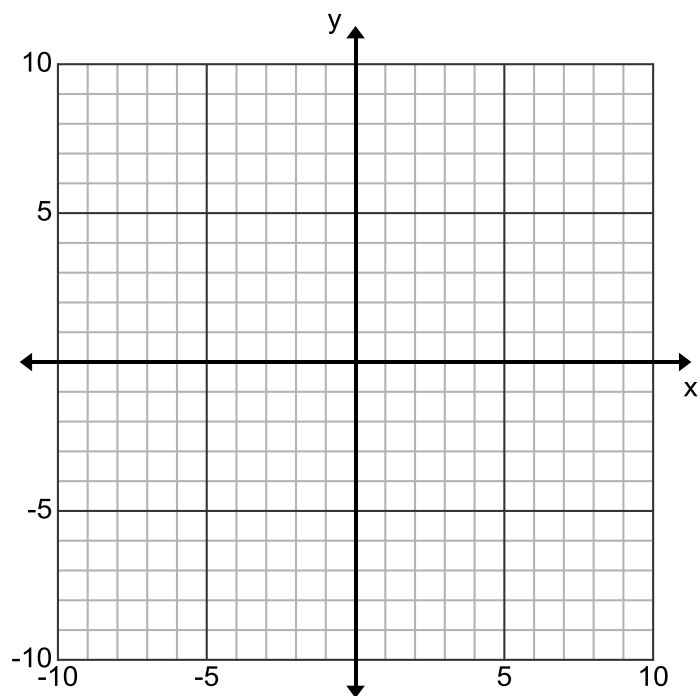
7) Show that $(x + 2)$ is a zero of the function $f(x) = x^4 + 10x^3 + 21x^2 + 6x - 8$.

8) Simplify: $\dfrac{\dfrac{4}{3x} + \dfrac{2}{x^2}}{\dfrac{x}{x+1} - \dfrac{4}{x+1}}$

9) Describe the transformation necessary to transform the graph of $f(x)$ into that of $g(x)$.
$$f(x) = x^3$$
$$g(x) = 3(x + 1)^3$$

10) If $f(x) = x - 2$ and $g(x) = x^2 - 3x + 2$ find, $g(f(x))$.