Name: _____ Date: _____ Class: _____

Honors Pre-Calculus Unit 1 Test Review Sheet

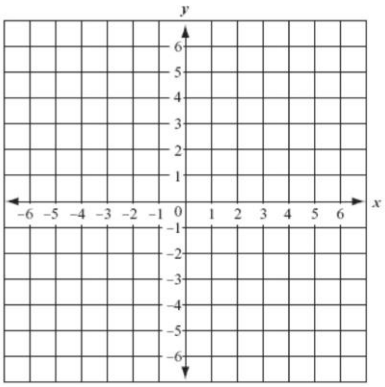
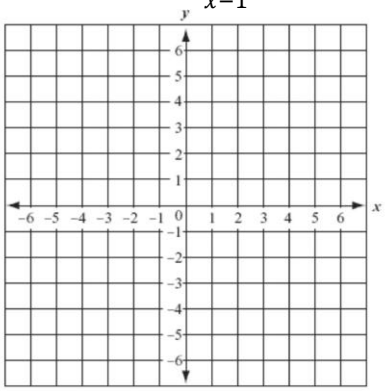
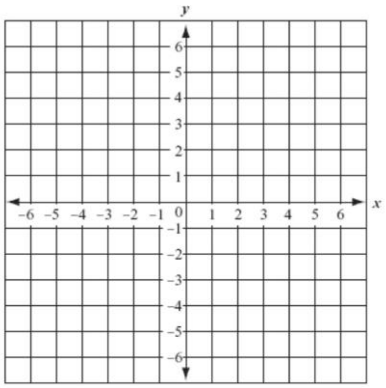
1. Find the domain of the following functions

   a. $f(x) = x^2 + 2x + 1$ b. $f(x) = \frac{2}{x^2-5x}$ c. $f(x) = \frac{2}{|x+8|}$

   _____ _____ _____

2. Graph the functions

   a. $y = (x+3)^2 - 4$ b. $y = -\frac{1}{x-1} - 2$ c. $y = log(-x) - 3$

3. Analyze the functions

   a. $y = (x+1)^3 - 5$ b. $y = -3|x| - 4$ c. $y = 7e^x + 3$

Domain: _____ Domain: _____ Domain: _____

Range: _____ Range: _____ Range: _____

Continuous: _____ Continuous: _____ Continuous: _____

Symmetry: _____ Symmetry: _____ Symmetry: _____

Inc/Dec: _____ Inc/Dec: _____ Inc/Dec: _____

Bounded: _____ Bounded: _____ Bounded: _____

Extrema: _____ Extrema: _____ Extrema: _____

Asymptotes: _____ Asymptotes: _____ Asymptotes: _____

End Behavior: _____ End Behavior: _____ End Behavior: _____

_____ _____ _____

4. Reflect the following functions over the x and y axis

   a. $f(x) = -3x^3 + 4x^2 - 9x - 6$ b. $f(x) = \frac{6x^2-4x+1}{3x-2}$

5. Determine if the function is continuous. If not, state the type of discontinuity.

   a. $y = \frac{4}{x-2}$ b. $y = \frac{4x^2-9}{2x+3}$ c. $y = -\sin(4x)$ d. $y = 7int(x) - 3$

_____ _____ _____ _____

6. Find the composition of functions and then evaluate the given function.

a. $f(x) = 2x - 5 \quad g(x) = x^2 - 9$

i. $f(g(x))$

ii. $g(f(x))$

iii. $f(g(-2))$

b. $f(x) = \sqrt{x-5} \quad g(x) = 6e^x$

i. $f(g(x))$

ii. $g(f(x))$

iii. $g(f(5))$

7. Decompose the functions: find $f(x)$ and $g(x)$ if $h(x) = f(g(x))$ *there are multiple answers

a. $h(x) = 6x^2 - 5$ $f(x) =$ _____ $g(x) =$ _____

b. $h(x) = \frac{7}{x^3-1}$ $f(x) =$ _____ $g(x) =$ _____

c. $h(x) = \sqrt{5x+2} - 9$ $f(x) =$ _____ $g(x) =$ _____

8. Write the function that has the following characteristics:

a. Quadratic: Shifted left 2, reflect over x axis, up 5 _____

b. Reciprocal: Vertical stretch 6, reflect over y axis, right 7 _____

c. Write the transformations: $w(x) = -\sqrt{x-3} + 4$ _____

$w'(x) = \frac{3}{4}\sqrt{x+1} - 2$ _____

9. Find the inverse of the following functions

a. $y = 5x - 4$

_____

b. $y = \frac{2x+1}{6-7x}$

_____

c. Evaluate $y^{-1}(2)$ if $y = \sqrt{4x+1}$

_____

10. Prove the functions are inverses using composition. $f(x) = \frac{-x+3}{4x-5}$, $g(x) = \frac{5x+3}{4x+1}$