Summer Assignment

Precalculus

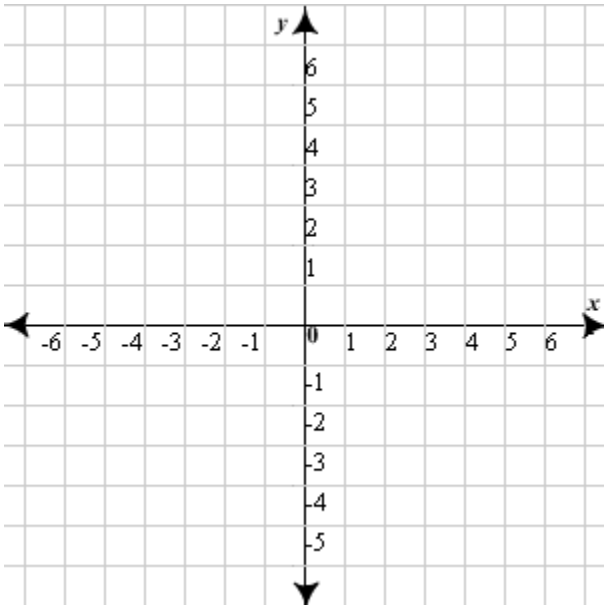
Name: _____

Be sure to show all work and box all final answers when appropriate.

1) Find the equation of the line that goes through the points (–6, –1) and (4, –3) in slope-intercept form.

2) Write the equation of the line that passes through the point (–3, 5) and is perpendicular to the line y = –2 in any form.

3) Graph the function, f(x) = –|x – 3| + 1



For #4 – 5, simplify the following complex expressions. Write all complex numbers in standard form.

4) $(3 - 2i)(5 + i)$

5) $\dfrac{5 + i}{2 - 3i}$

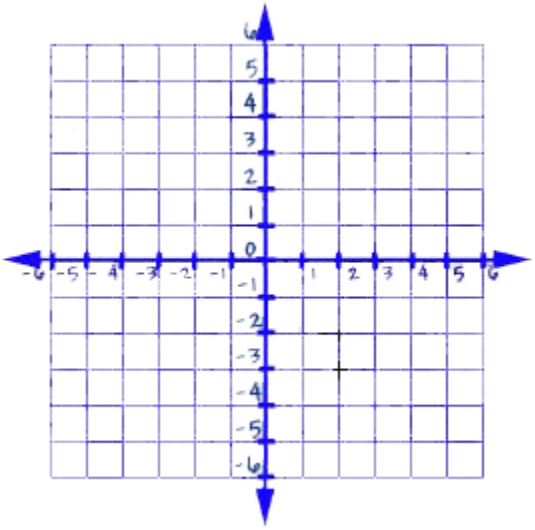
6) For the following quadratic equation, find the coordinates of the vertex, and the x and y intercepts. Be sure to show your work. $y = 2x^2 - 3x - 5$

7) Given that $f(x) = x - 5$ and $g(x) = x^2 + 3$, find the following:

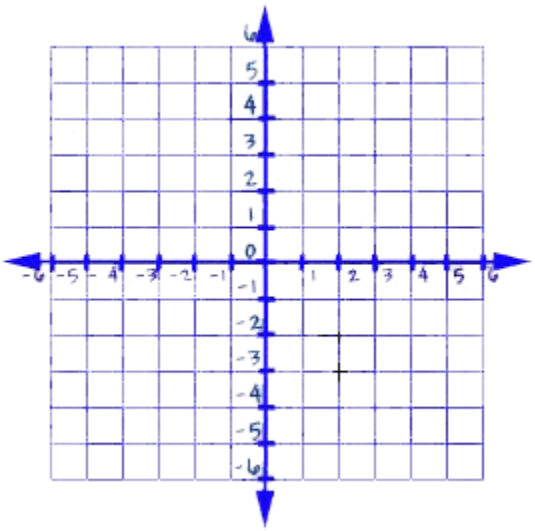
a) $f(g(-2))$ b) $g(f(x))$ c) $f(f(x))$

For #8 and #9, solve the following inequalities by sketching a graph on the coordinate plane provided.

8) $y < \frac{1}{2}x - 3$



9) $y \geq 5x^2 - 2x - 6$



10) Solve the following for x, by using the quadratic formula. $x^2 - 5x + 9 = 0$

11) Divide $2x^3 - 3x^2 - 5x - 12$ by $x - 3$ using synthetic division and write a summary statement in fraction form.

For #12 – 13, list the domain for each of the following functions.

12) $f(x) = \sqrt{x-3}$

13) $g(x) = \dfrac{x+3}{x-5}$

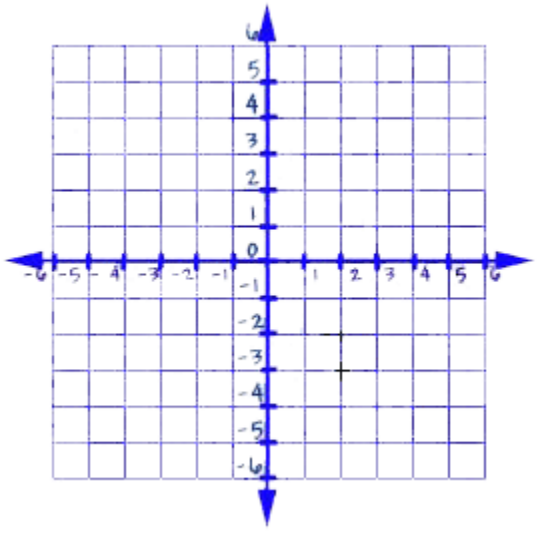
For #14 – 15, find the inverse of f(x).

14) f(x) = {(3, ½), (–5, 4), (2, 1), (–4, 0)}

15) $f(x) = x^2 - 3$

16) Give a sketch of the following function. What is the domain and the range? What is(are) the y-intercept(s)? What is the equation of the asymptote?

$f(x) = (2)^{x-3} + 1$



For #17 – 18, given the function $f(x) = (\frac{1}{2})^{x+1} - 2$*, find the following.*

17) f(0)

18) f(–2)

For #19 – 21, list whether each function is exponential growth or decay. Explain your answer.

19) $f(x) = 3(\frac{1}{4})^x - 2$ 20) $g(x) = (2)^{-x} + 1$ 21) $h(x) = 3(3)^{x+3}$

22) Expand the following logarithm: $\log_2 \frac{x^2}{y^3 z}$

23) Condense the following logarithm: $\ln 3 - 2\ln 5 + \frac{1}{2}\ln 9$

24) Use the change of base formula to simplify the following logarithm. Round to the nearest hundredth: $\text{Log}_5 22$

25) On the coordinate plane below, graph the following. $f(x) = \log_2 x$ and $g(x) = 2^x$. What do you notice about both graphs?