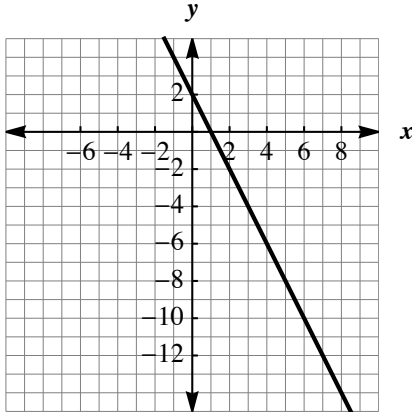


Foundational Review Test: Post-Review Version

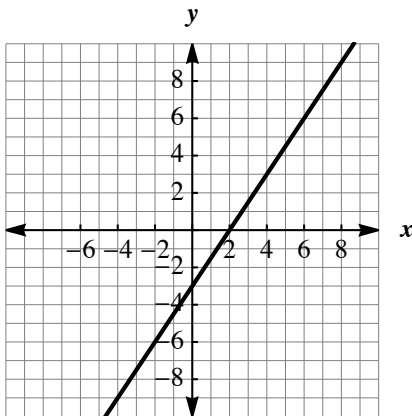
First & Last Name: _____ Class: _____

Section 1: Linear Equations and Graphs

1. Determine the slope and intercepts of the line: $m = \underline{\hspace{1cm}}$ x-intercept: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$ y-intercept: $(\underline{\hspace{1cm}}, \underline{\hspace{1cm}})$



2. What is the slope of the line through $(-1, -1)$ and $(5, 11)$? $m = \underline{\hspace{1cm}}$
 3. What is the equation of the horizontal line through $(0, -3)$?
 4. Write the equation of the line whose slope is 7 and the y-intercept is $(0, -4)$.
 5. Find the equation of the line graphed below in slope-intercept form. Use exact numbers.



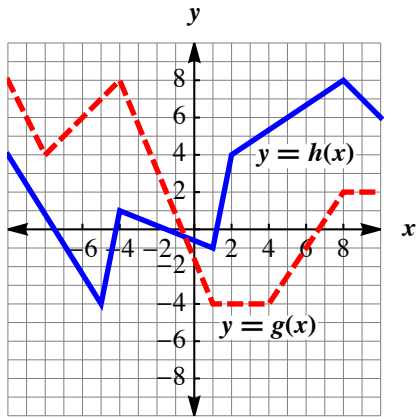
6. Find the equation of the line through $(-7, 10)$ and $(3, 5)$ in point-slope form.

Section 1: Challenge Questions

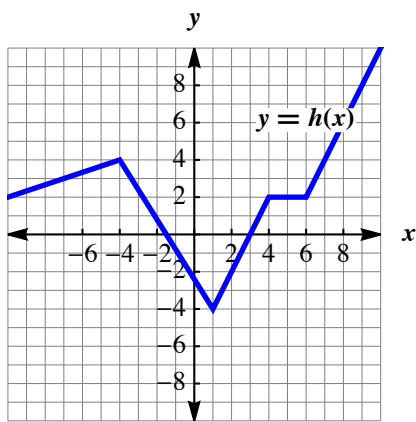
7. What is the slope of the line through (x_1, y_1) and (x_2, y_2) ? $m = \underline{\hspace{1cm}}$
 8. Find the equation of the line through $(-9, -1/3)$ and $(3, 1/5)$ in point-slope form.

Section 2: Functions

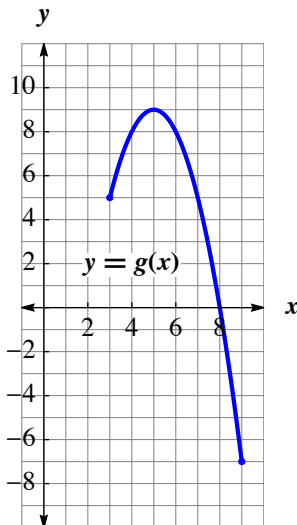
1. If $f(x) = -6x + 5$, find $f(-2)$.
 2. Use the graph to find $3g(-5) - h(1)$



3. If $g(x) = -10x - 7$, then $g(\quad) = 13$.
4. For the following graph if $h(x) = -2$, then $x =$



5. For a given input value r , the function h outputs a value q to satisfy the equation $q - 5 = -2(r + 1)$. Write a formula for $h(r)$ in terms of r .
6. For the following graph,
- using interval notation, write the
 - domain of g
 - range of g
 - write the ordered pairs for all the
 - local minima
 - local maxima
 - write the ordered pairs for all the
 - absolute minima
 - absolute maxima
 - using interval notation, write the intervals where g is
 - positive
 - negative
 - using interval notation, write the intervals where g is
 - decreasing
 - increasing



Section 2: Challenge Questions

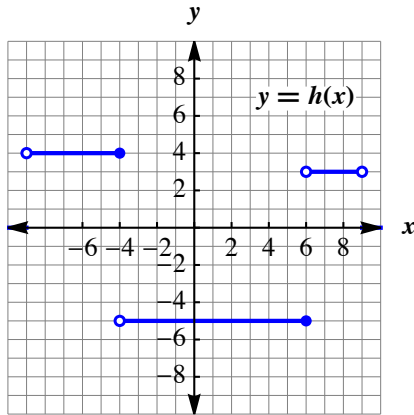
- For a given input value x , the function p outputs a value y to satisfy the equation $5y - 6x = 3(x - 1)$. Write a formula for $p(x)$ in terms of x .
- State the domain and range of $f(x) = \sqrt{2x - 9}$ using interval notation.

Section 3: Piecewise Functions

- What is $g(3)$ if

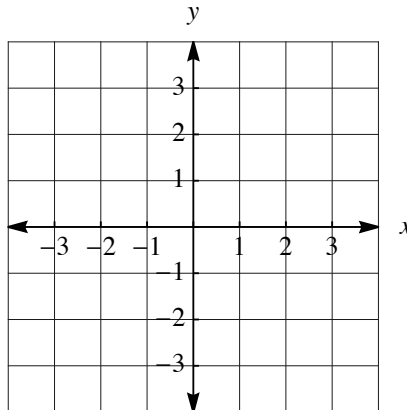
$$g(x) = \begin{cases} \sqrt{x^2 - 5} & \text{when } x \in (-\infty, -3) \\ 8x + 17 & \text{when } x \in [-3, 3) \\ (x - 5)(x + 1) & \text{when } x \in [3, \infty) \end{cases}$$

- Use the graph to evaluate $h(6)$.

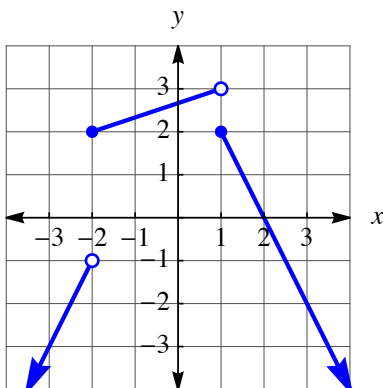


- Graph the piecewise function

$$f(x) = \begin{cases} x & x < -1 \\ -2x + 1 & x \geq -1 \end{cases}$$



- Write the piecewise function for the following graph:



Section 3: Challenge Question

5. What is $h(-2)$ if

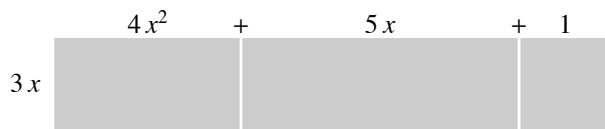
$$h(x) = \begin{cases} x^3 & \text{when } x \leq -2 \\ \sqrt{x+2} & \text{when } -2 < t < 0 \\ \frac{x^3}{x^2-4} & \text{when } t > 0 \end{cases}$$

Section 4: Exponents and Radicals

1. Rewrite $\frac{w^6}{w^{11}}$ in the form w^n .
2. Simplify $(x^{-1} \cdot y^3)^{-5}$ as much as possible.
3. Rewrite $\sqrt[4]{16/b}$ in exponential form, $a b^n$.
4. Simplify $\sqrt{256 y^3 z^{53}}$.

Section 5: Polynomials

1. What is the degree of the polynomial $-q^9 + 22q^3 - q + 10$?
2. Subtract the following polynomial (your answer should be a polynomial in standard form).
 $(-8h^4 + 7h^3 - 2h^2 - 8) - (4h^4 + 4h^3 - 16)$
3. Multiply $(q^2)(-5q^6)$ (your answer should be a monomial in standard form).
4. Express the area of the entire rectangle (your answer should be a polynomial in standard form):



5. Expand $-5g^3h(7h^3 + 2gh - 3g^2)$ (your answer should be a polynomial in standard form).

Section 5: Challenge Questions

6. Multiply $(cp^{w-2}q^{x+3})(2cp^{w+2}q^x)$.

Section 6: Factors and Divisibility (Challenge/Honors)

1. Find the missing factor F that makes the equality true.
 $-45b^{-3} = (F)(9b^3)$
2. Factor $x(x-5) + 7(x-5)$ as the product of two binomials.
3. Factor $x^2 + 18x - 19$ as the product of two binomials.
4. Factor $x^2 + 8x - 33$ as the product of two binomials.
5. Factor $5x^2 + 14x - 3$ completely.
6. Factor $9x^2 - 121$ as the product of two binomials.

Section 7: Logarithms

1. Evaluate the following logarithms:
 - a. $\log_4 256 =$
 - b. $\log_{10} 10^8 =$
 - c. $\log_{1/4} 2 =$
 - d. $\log_{10} \frac{1}{10^8} =$
2. Solve for b :
 - a. $\log_b 27 = 3$
 - b. $\log_b 3 = 3$
3. Expand the following:

a. $\log(10 x^2) =$

b. $\log_b\left(\frac{x^{1/3} y^2}{z^5}\right) =$

4. Condense the following:

a. $\frac{1}{2} \log(x + 5) =$

b. $3 \log_3(a) - \frac{1}{2} \log_3(b) + \log_3(c) =$