

Student Name: \_\_\_\_\_

Show all relevant work (use back of pages for scratch paper, if needed). **CIRCLE FINAL ANSWERS.**  
Leave answers as fractions, not decimals. Each question is worth 5 points.

1. Let  $f(x) = \frac{\sqrt{4-x}}{2x+3}$ .

(a) What is the domain of  $f$ ?

(b) Evaluate  $f(-5)$ .

2. Let  $f(x) = \begin{cases} 2-x & \text{if } x \leq 0 \\ x^2 + 8 & \text{if } x > 0 \end{cases}$

(a) Evaluate  $f(7)$ .

(b) Evaluate  $f(-2)$ .

3. For the function  $h(z) = 9 + z^3$  on the interval from  $z = -1$  and  $z = 2$ ,

(a) what is the net change?

(b) what is the average rate of change?

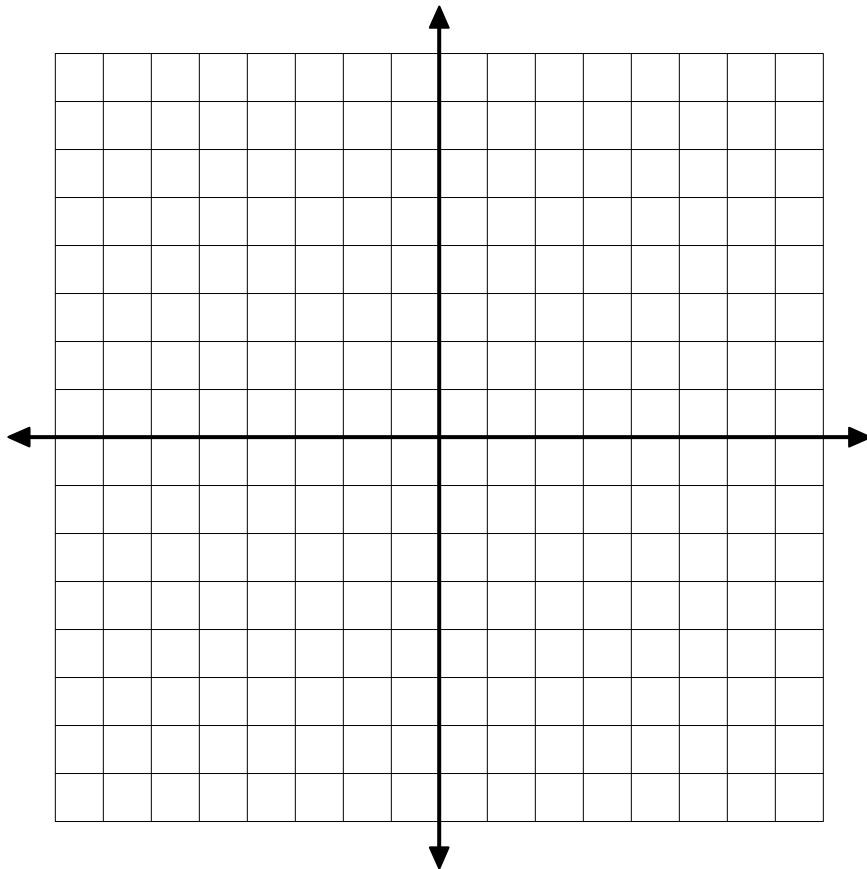
4. A function  $g$  is described in words as: "Add 1 to the number, then take the square root."

(a) Express function  $g$  algebraically.

(b) Complete the chart of values for  $g$ :

$x$	$g(x)$
-1	
0	
1	
3	
8	

(c) Plot the points and sketch the graph of  $g$  using the table from (b) as a guide.



5. If  $f(x) = x^2 - 5$  and  $g(x) = 3x + 6$ , find the following :

(a)  $(f + g)(8)$

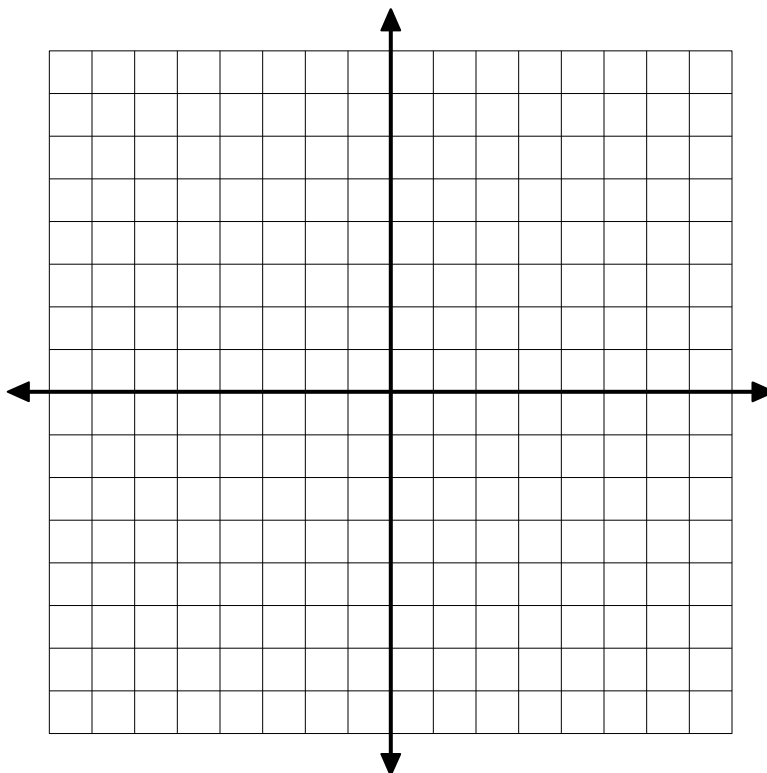
(b)  $(g \circ f)(x)$

(c)  $(g - f)(x)$

(d)  $(fg)(2)$

(e) Is function  $f$  even, odd, or neither even nor odd?

6. On the grid below sketch the graph of  $f(x) = |x|$ . Then, sketch the graph of  $g(x) = |x - 4| + 1$ . You may plot points by hand or use knowledge of transformations. Please label each graph drawn.  
[5pts, each graph]



7. In each part find  $f^{-1}$ .

(a)  $f(x) = \frac{x}{5+3x}$

(b)  $f(x) = \sqrt{5+x}$

8. A pizza parlor sells pizza by the slice for \$3.00 + \$0.50 per topping. The price can therefore be expressed as  $p(x) = 3 + 0.5x$  where  $x$  is the number of toppings you want.

(a) How much would a slice of pizza cost if you got mushrooms, pepperoni, and onions on it?

(b) Find  $p^{-1}(x)$ .

(c) Evaluate  $p^{-1}(5)$ . What does this evaluation demonstrate?