UNIT 3 Absolute Value and Piecewise Functions **NAME:**_____

REVIEW

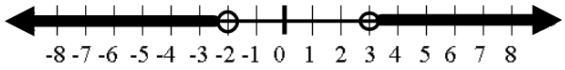
DATE:_____

Graph the compound inequality.

1. $-4 < x \leq 5$

Write a compound inequality that represents…

2.

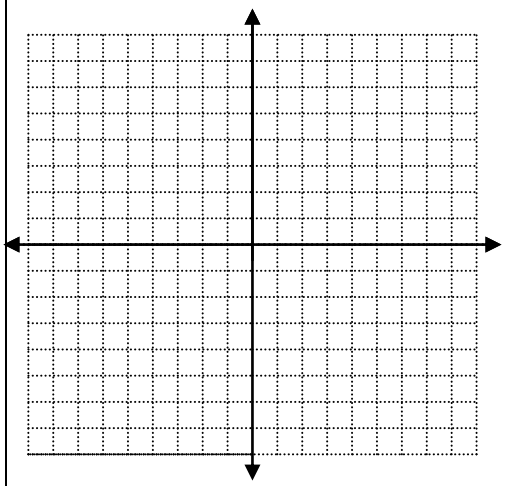


Solve the inequality and graph the solution.

3. $2|4 - 3x| \geq -8$

Graph the following.

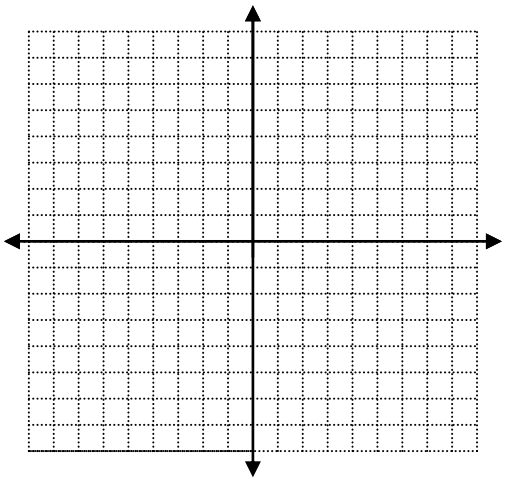
4. $f(x) < \frac{2}{3}x - 4$



Graph the following. State the range.

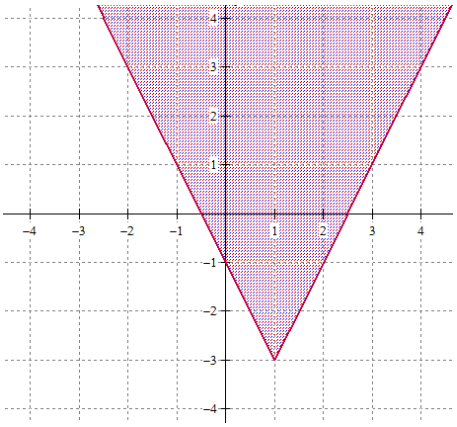
5. $y = -\frac{1}{4}|x + 3| + 5$

Range =



Write the inequality of the function. Is the point given a solution?

6. (-1,3)



Use the piecewise function to evaluate the following.

7.

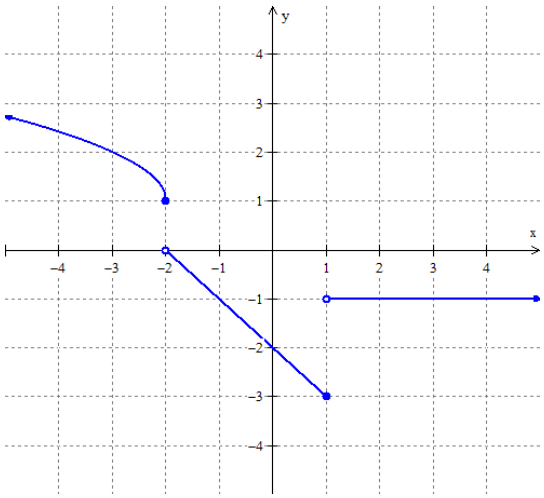
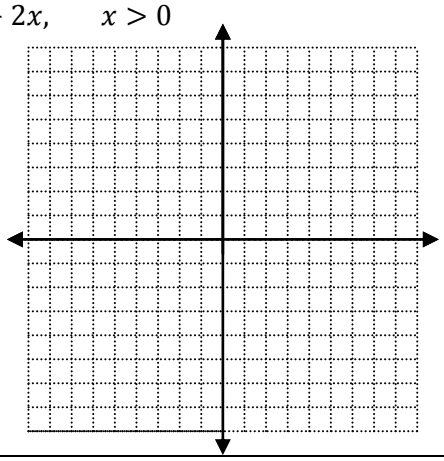
$$f(x) = \begin{cases} |2x - 1| + 2, & x \leq -3 \\ x^2 - 3x, & -3 < x \leq 1 \\ \dfrac{2}{x - 1}, & x > 1 \end{cases}$$

a. $f(4) =$

b. $f(-6) =$

c. $f(1) =$

d. $f(-2) =$

Use the piecewise function to evaluate the following.	Graph the following piecewise functions.
8.  a. $f(2) =$ b. $f(-3) =$ c. $f(-2) =$ d. $f(1) =$	9. $f(x) = \begin{cases} \frac{1}{3}x + 5, & x \leq 0 \\ 6 - 2x, & x > 0 \end{cases}$ 

Application

VERBALLY

Admission into a secret math society requires the applicant be between the ages of 32 and 46. Which of the following inequalities can be used to determine whether an applicant's age, *a*, satisfies the requirements for the society?

(A) $|a - 7| < 39$
(B) $|a + 39| < 7$
(C) $|a + 32| < 46$
(D) $|a - 39| < 7$
(E) $|a - 46| < 7$

ALGEBRAICALLY

A snowstorm hits the KMCC and is modeled by the function below where *t* is the time in hours and *r* is snowfall rate in inches per hour.

$$r(t) = -0.5|t - 4| + 2$$

a. Find *r*(3). What does this mean?

b. What is the maximum snowfall rate?

c. When will the snowfall rate be 1 inch per hour?

NUMERICALLY

Fill in the table using the function $f(x) = 2|x| - 3$.

x	*f(x)*
-2	
0	
5	
-6	
	21
	-1

GRAPHICALLY

Check out the suspension bridge below that is suspended from two towers. Write an absolute value function that represents the inverted V-shaped portion of one tower.