Section 4-3 WS

Name:_____

Piecewise Functions
Secondary Math 2 Honors

Part I. Carefully graph each of the following. Identify whether or not he graph is a function. Then, evaluate the graph at any specified domain value. You may use your calculators to help you graph, but you must sketch it carefully on the grid!
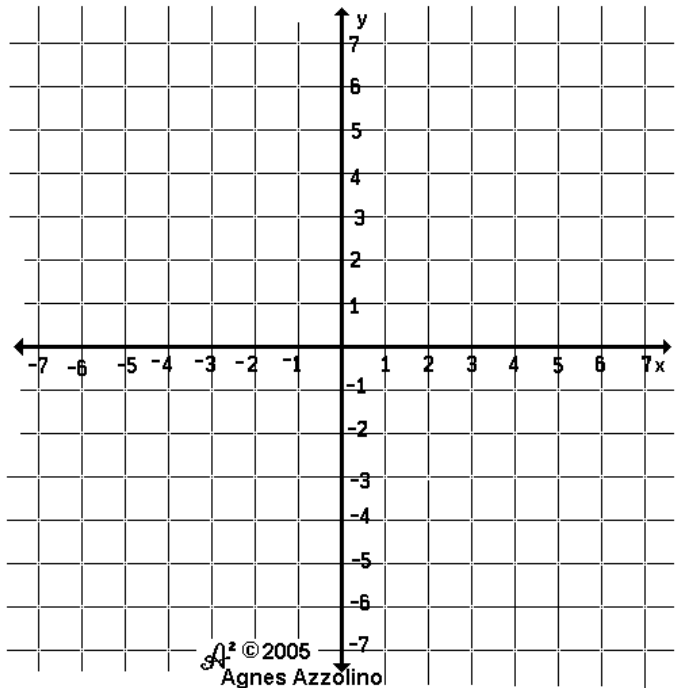
1. $f(x) = \begin{cases} x + 5 & x < -2 \\ -2x - 1 & x \geq -2 \end{cases}$

    Function? Yes or No
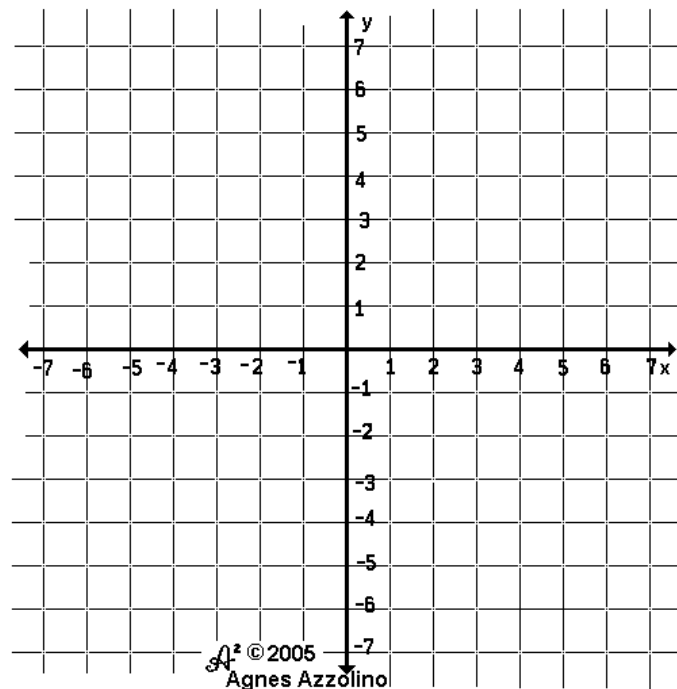
    $f(3) =$

    $f(-4) =$

    $f(-2) =$

2. $f(x) = \begin{cases} 2x + 1 & x \geq 1 \\ \frac{x}{2} - 3 & x < 1 \end{cases}$

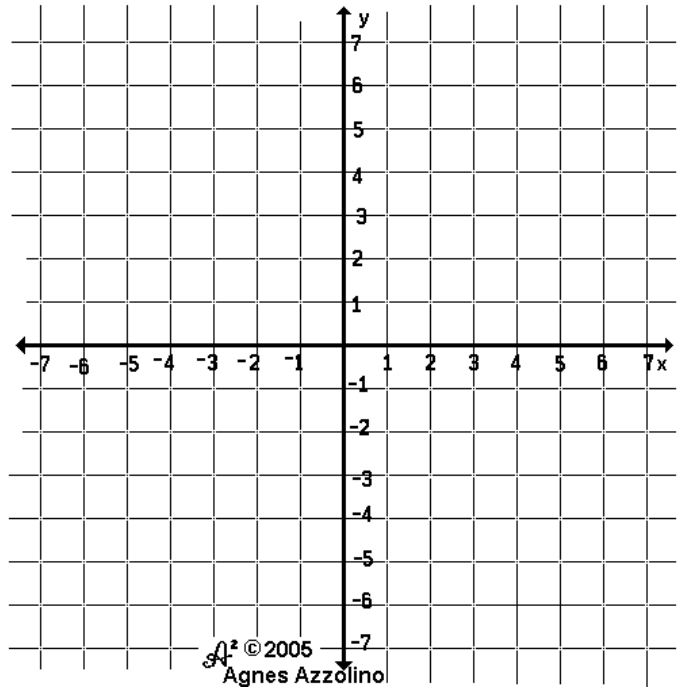   Function? Yes or No

    $f(-2) =$

    $f(6) =$

    $f(1) =$

3. $f(x) = \begin{cases} 4x - 2 & x \geq 2 \\ -\dfrac{x}{3} + 4 & x < 2 \end{cases}$
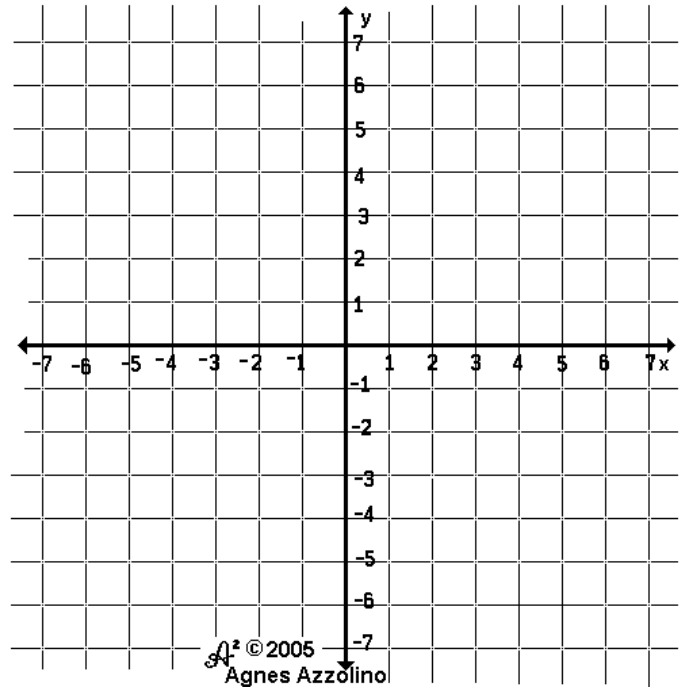
Function?　Yes　or　No

$f(-4) =$

$f(8) =$

$f(2) =$

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4. $f(x) = \begin{cases} -x + 4 & x \leq 0 \\ \dfrac{2x}{3} - 1 & 0 < x \leq 5 \\ 2 & x > 5 \end{cases}$

Function?　Yes　or　No

$f(-2) =$

$f(0) =$

$f(5) =$

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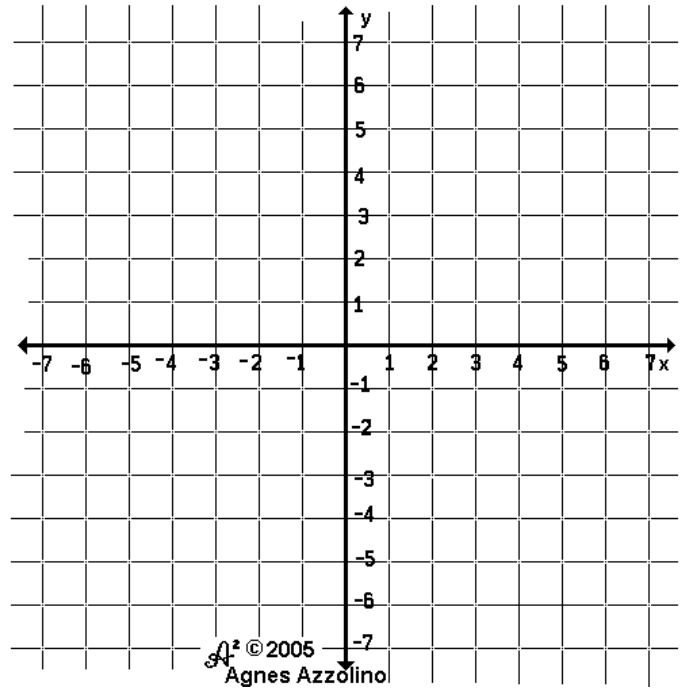
5. $f(x) = \begin{cases} -x + 1 & x \leq 0 \\ -\frac{4x}{3} - 4 & x > 0 \end{cases}$
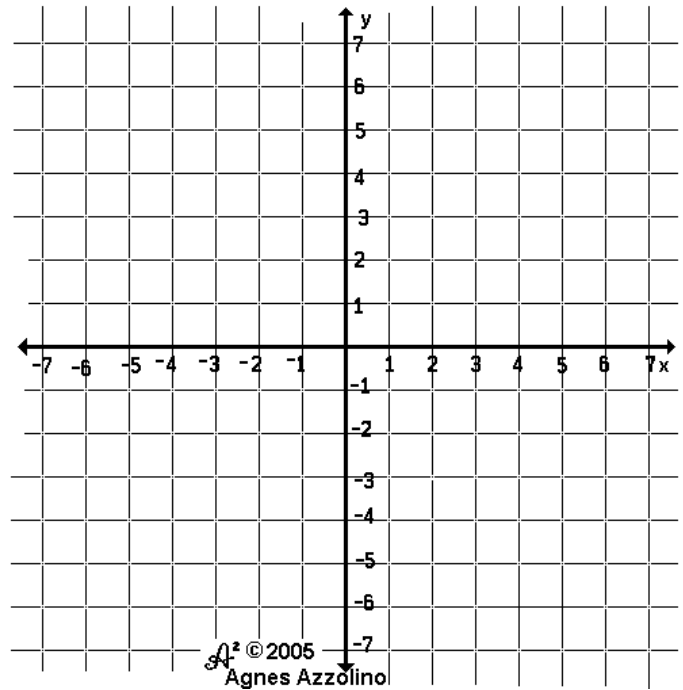
Function?   Yes   or   No

$f(-4) =$

$f(0) =$

$f(3) =$

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6. $f(x) = \begin{cases} -3 & x \leq 3 \\ 2x - 5 & x > 3 \end{cases}$

Function?   Yes   or   No

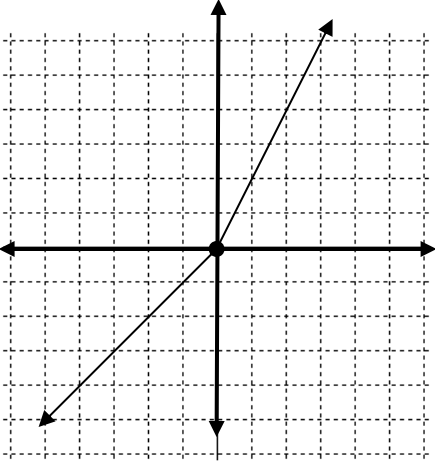$f(-4) =$

$f(0) =$

$f(3) =$

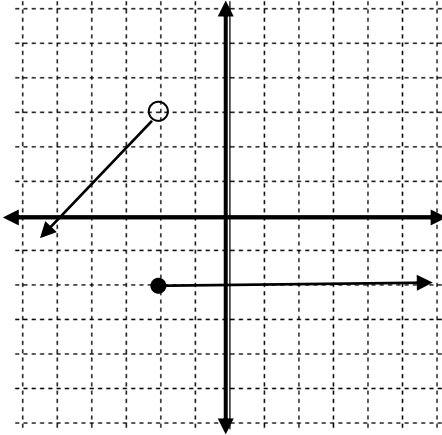
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Part II. Write equations for the piecewise functions whose graphs are shown below. Assume that the units are 1 for every tic marc.
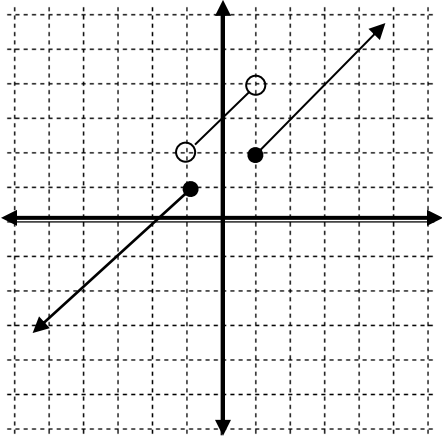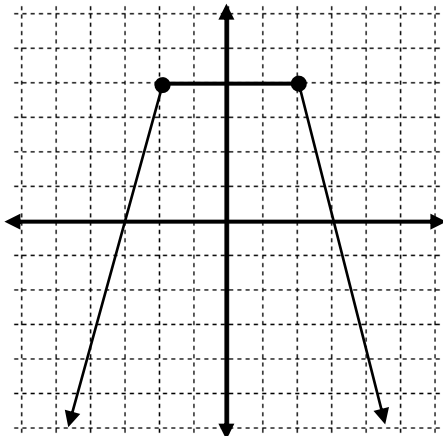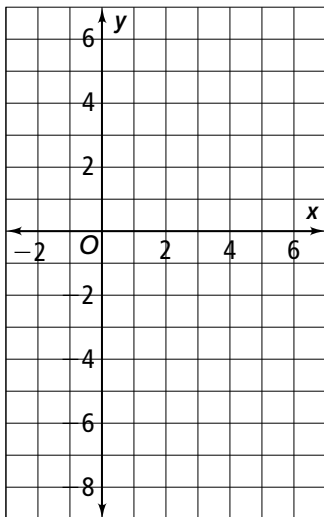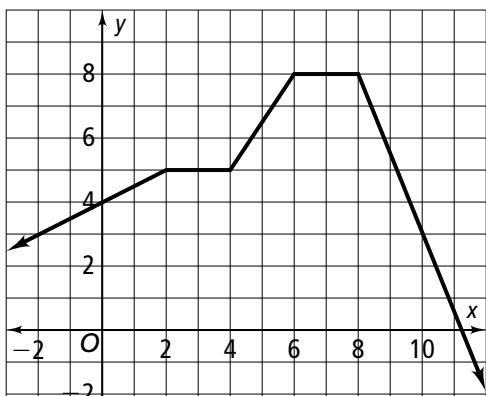
7.

8.

9.

10.

Practice

Piecewise Functions

1. Graph the function $f(x) = \begin{cases} 2x - 4, & \text{for } x \geq 3 \\ -x^2 + 2, & \text{for } x < 3 \end{cases}$.
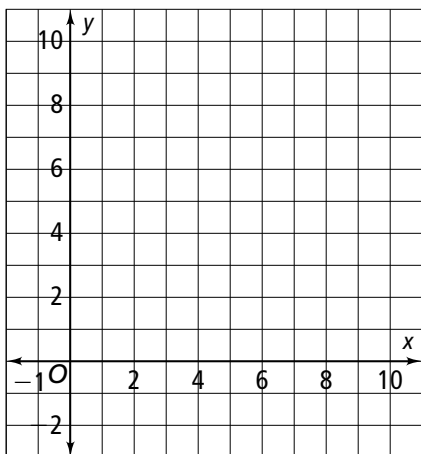
2. Write a piecewise function that represents the graph shown below.

3. Consider the absolute value function $f(x) = -2|x - 4| + 8$.

    a. Graph the function.

    b. What is the piecewise definition for the graph?

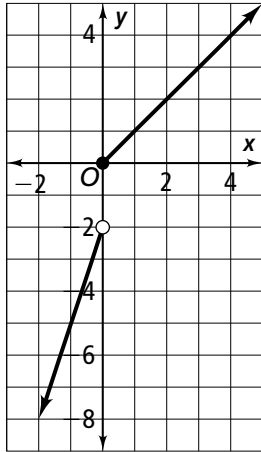## **Practice** (continued)   *Form G*

Piecewise Functions

4. The graph of $f(x)$ is given below. What is the graph of $g(x) = f(x - 2)$?

5. What is the graph of the step function $f(x) = 2\lfloor x - 3 \rfloor$?

6. Reasoning Define the greatest integer function $f(x) = \lceil x \rceil$ in your own words. Then use the definition to explain how you know where to place closed circles and open circles when graphing a greatest integer function.