2.6 Piecewise Functions

SCORE:

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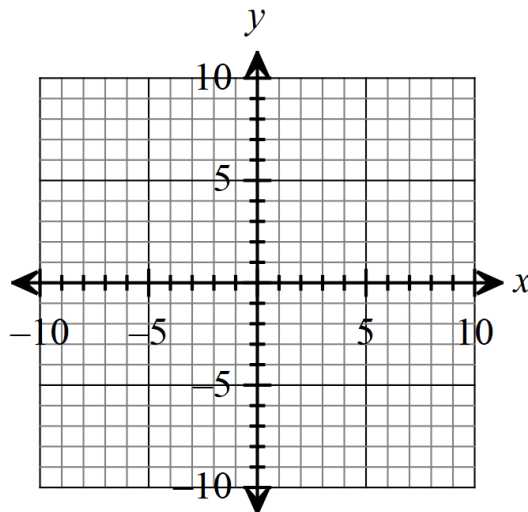
Name _____ Date _____ Period _____

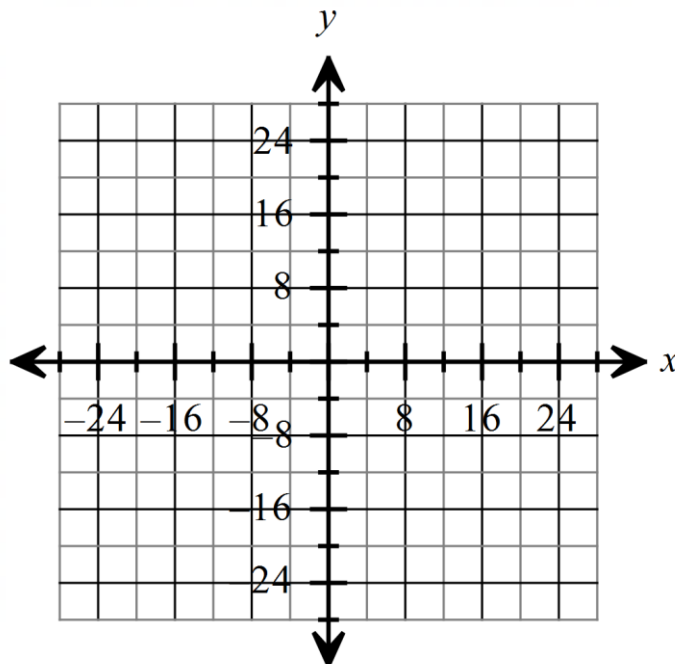**Sketch the graph of each piecewise function defined below.**

1. $f(x) = \begin{cases} x^2, & \text{if } x < 0 \\ 2, & \text{if } x = 0 \\ 2x+1, & \text{if } x > 0 \end{cases}$

Find: $f(-2) =$ $f(0) =$ $f(2) =$

2. $f(x) = \begin{cases} 2x-4, & \text{if } -1 \le x \le 2 \\ x^3, & \text{if } 2 < x \le 3 \end{cases}$

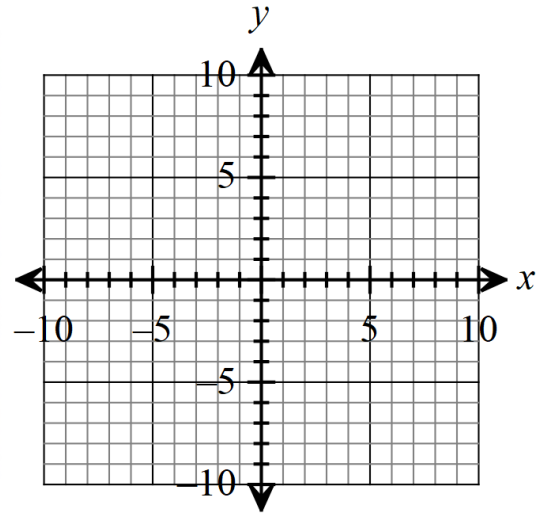Find: $f(1) =$ $f(0) =$ $f(2) =$ $f(3) =$

In problems 3-6 graph the function and find each of the following listed.

3. $f(x) = \begin{cases} 2x, & \text{if } x \neq 0 \\ 1, & \text{if } x = 0 \end{cases}$
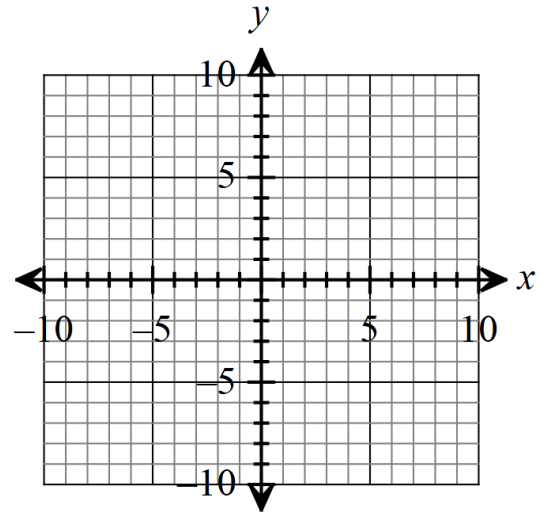
a) Domain: _____

b) Range: _____

c) Intercepts: _____

Is the graph continuous? _____

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

a) Domain: _____

b) Range: _____

c) Intercepts: _____

Is the graph continuous? _____

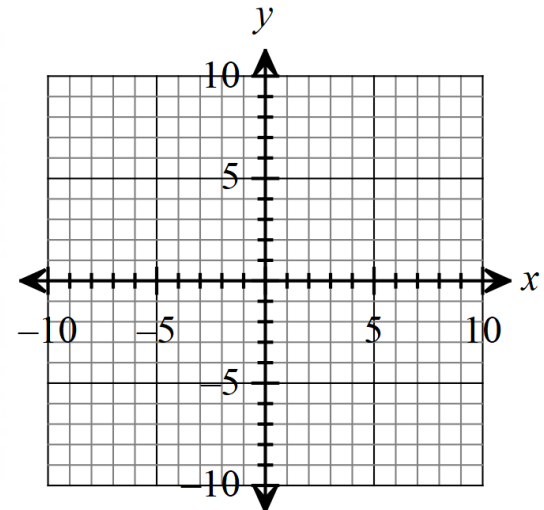5. $f(x) = \begin{cases} 1+x, & \text{if } x < 0 \\ x^2, & \text{if } x \geq 0 \end{cases}$

a) Domain: _____

b) Range: _____

c) Intercepts: _____
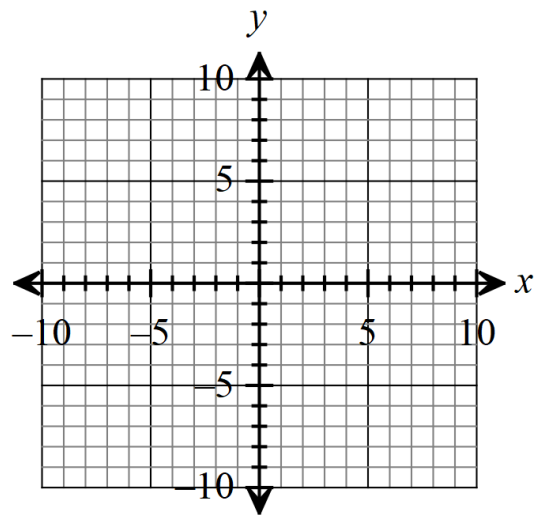
Is the graph continuous? _____

6. $f(x) = \begin{cases} |x|, & \text{if } -2 \leq x < 0 \\ x^3, & \text{if } x > 0 \end{cases}$
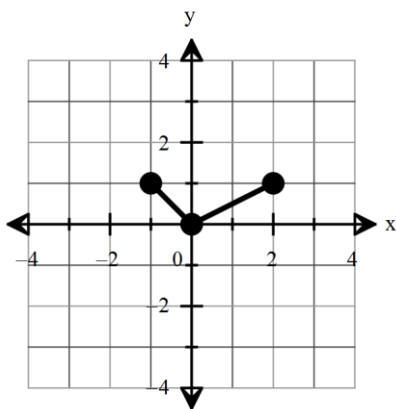
a) Domain: _____

b) Range: _____

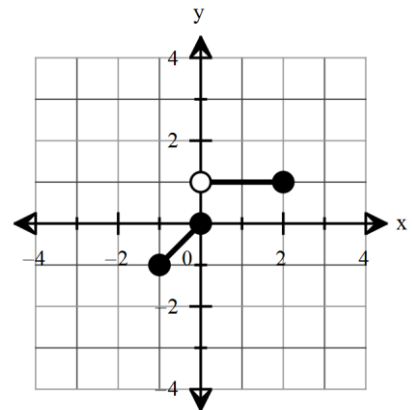c) Intercepts: _____

Is the graph continuous? _____

The graph of a piecewise function is given. Write a definition for each function.

7.

8.

9. Peterson's Cell Phones offers a monthly cellular plan for $39.99. It includes 450 anytime minutes and charges $0.45 per minute for additional minutes. Write a definition for the function. Use the function to compute the monthly cost of the cell phone for each of the following.

a.) 200 minutes
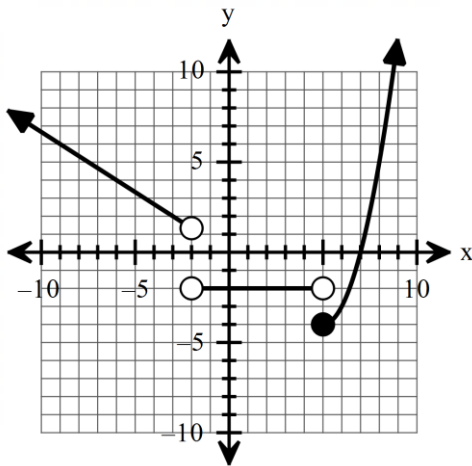
b.) 465 minutes

c.) 451 minutes.

10. If you earned up to $113,700 in 2013 from an employer, your Social Security tax rate was 6.2% of your income. If you earned over $113,700, you pay a fixed amount of $7,049.40.

a.) Write a piecewise function to represent the Social Security taxes for incomes between $0 and $500,000.

b.) How much Social Security tax would someone who made $50,000 owe?

c.) What is the meaning of $f(150,000)$? What is the value?

11.

Domain:

Range:

x-intercept(s):

y-intercept:

Increasing:

Decreasing:

Constant:

Positive:

Negative:

Maximums / minimums:

Symmetry:

End Behavior:

$$\lim_{x \to -\infty} f(x) = \qquad \lim_{x \to \infty} f(x) =$$