

Do Now: #s 1-4

Name: _____

PC: Evaluating Piecewise Functions

Date: _____

Ms. Loughran

Evaluate the function at the specified values.

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

a) $f(-1)$

$$2(-1) + 1$$
$$-1$$

b) $f(0)$

$$2(0) + 2$$
$$2$$

c) $f(2)$

$$2(2) + 2$$
$$6$$

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

a) $f(-2)$

$$(-2)^2 + 2$$
$$6$$

b) $f(1)$

$$1^2 + 2$$
$$3$$

c) $f(2)$

$$2(2)^2 + 2$$
$$10$$

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

a) $f(-2)$

$$3(-2) - 1$$
$$-7$$

b) $f(-\frac{1}{2})$

$$4$$

c) $f(3)$

$$3^2$$
$$9$$

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

a) $f(-3)$

$$4 - 5(-3)$$
$$19$$

b) $f(4)$

$$4^2 + 1$$
$$17$$

c) $f(-1)$

$$0$$

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linear

$$x = -2, f(-2) = 3$$

$$x = -3, f(-3) = 2$$

$$x = -4, f(-4) = 1$$

quadratic

$$x = -2, f(-2) = 3$$

$$x = -1, f(-1) = 2$$

$$x = 0, f(0) = 3$$

$$x = 1, f(1) = 6$$

Part I. Graph each function. Find the domain and range for each piecewise function. Then, evaluate the function at the specified domain value.

1. $f(x) = \begin{cases} x + 5 & x < -2 \\ x^2 + 2x + 3 & x \geq -2 \end{cases}$

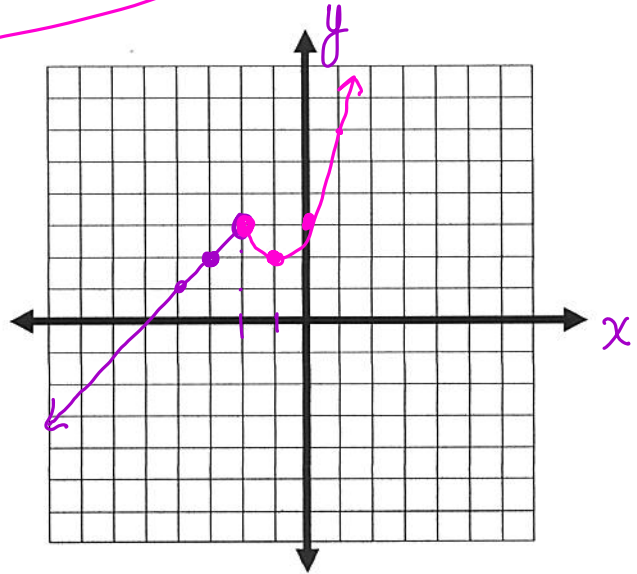
Domain: $(-\infty, \infty)$ quadratic (parabola)

Range: $(-\infty, \infty)$

$$f(3) = 3^2 + 2(3) + 3 = 18$$

$$f(-4) = -4 + 5 = 1$$

$$f(-2) = (-2)^2 + 2(-2) + 3 = 3$$



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

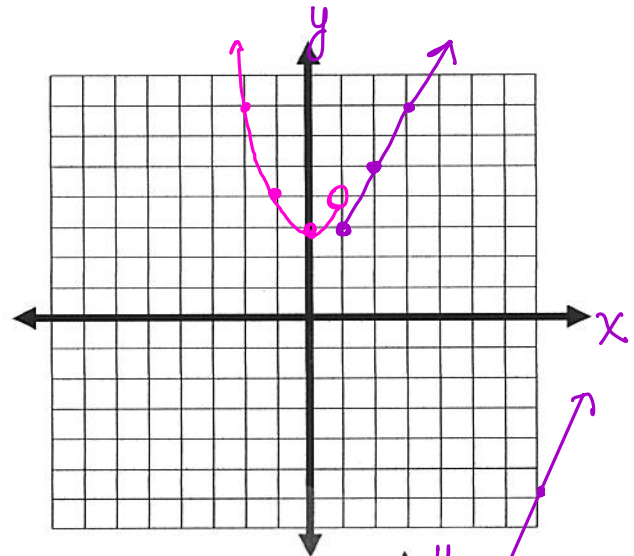
Domain: $(-\infty, \infty)$

Range: $[3, \infty)$

$$f(-2) = 7$$

$$f(6) = 2(6) + 1 = 13$$

$$f(1) = 3$$



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

Domain: $(-\infty, \infty)$

Range: $[-3, \infty)$

$$f(-4) = -2(-4) + 1 = 9$$

$$f(8) = 5(8) - 4 = 36$$

$$f(2) = -2(2) + 1 = -3$$

