Bell Work

1. What is the quadratic formula?

2. What is the domain in interval notation of the constant parent function?

3. Divide and show all work. $\dfrac{-5+i}{3-4i}$

4. Find the roots of this quadratic function. Show all work.

$$f(x) = x^2 + 12x - 6$$

Find the intersection of the quadratic and linear functions.

$$f(x) = x^2 + 6x - 2 \quad \text{and} \quad g(x) = 2x + 3$$

Set them equal to each other.

$$x^2 + 6x - 2 = 2x + 3$$

Move the linear to the other side, so one side is 0.

$$x^2 + 4x - 5 = 0$$

Factor.

$$(x + 5)(x - 1) = 0$$

Solve for x.

$$x = -5, \ 1$$

Substitute both numbers into the linear function to find you range numbers.

$$g(-5) = 2(-5) + 3 = -7$$

$$g(1) = 2(1) + 3 = 5 \qquad (1, 5) \ \& \ (-5, -7)$$

Write your ordered pairs.

Find the intersection of the quadratic and linear functions.

$$f(x) = -x^2 + 8x - 10 \text{ and } g(x) = x - 4$$

$$-x^2 + 8x - 10 = x - 4$$

Set them equal to each other.

$$-x^2 + 7x - 6 = 0$$

Move the linear to the other side, so one side is 0.

Change signs.

$$x^2 - 7x + 6 = 0$$

Factor.

$$(x - 1)(x - 6) = 0$$

Solve for x.

$$x = 1, \ 6$$

$$g(1) = 1 - 4 = -3$$

Substitute both numbers into the linear function to find you range numbers.

$$g(6) = 6 - 4 = 2 \qquad (1, -3) \text{ & } (6, 2)$$

Write your ordered pairs.

Find the intersection of the quadratic and linear functions.

$$f(x) = x^2 - 12x + 29 \text{ and } g(x) = -2x + 8$$

$$x^2 - 12x + 29 = -2x + 8$$

Set them equal to each other.

$$x^2 - 10x + 21 = 0$$

Move the linear to the other side, so one side is 0.

$$(x - 3)(x - 7) = 0$$

Factor.

$$x = 3, 7$$

Solve for x.

$$g(3) = -2(3) + 8 = 2$$

Substitute both numbers into the linear function to find you range numbers.

$$g(7) = -2(7) + 8 = -6 \quad \text{(3, 2) \& (7, -6)}$$

Write your ordered pairs.

Find the intersection of the quadratic and linear functions.

$$f(x) = x^2 + 6x + 7 \quad \text{and} \quad g(x) = -2x - 4$$

$$x^2 + 6x + 7 = -2x - 4$$

Set them equal to each other.

$$x^2 + 8x + 11 = 0$$

$$x^2 + 8x = -11$$

Can't factor. Complete the square.

Move the linear to the other side, so one side is 0.

$$x^2 + 8x + 16 = -11 + 16$$

Factor.

$$(x + 4)^2 = 5$$

$$g(-1.8) = -2(-1.8) - 4 = -0.4$$

Solve for x.

$$\sqrt{(x + 4)^2} = \sqrt{5}$$

$$g(-6.2) = -2(-6.2) - 4 = -8.4$$

$$x + 4 = \pm 2.2 \quad \text{Round.}$$

(-1.8, -0.4) & (-6.2, -8.4)

Substitute both numbers into the linear function to find you range numbers.

$$x = -4 \pm 2.2$$

$$x = -4 + 2.2 = -1.8$$

$$x = -4 - 2.2 = -6.2$$

Write your ordered pairs.

Find the intersection of the quadratic and linear functions.

$$f(x) = (x+4)^2 - 3 \quad \text{and} \quad g(x) = -x - 5$$

Set them equal to each other.

$$(x+4)(x+4) - 3 = -x - 5$$

FOIL

Move the linear to the other side, so one side is 0.

$$x^2 + 4x + 4x + 16 - 3 = -x - 5$$

Factor.

$$x^2 + 9x + 18 = 0$$

Solve for x.

$$(x+3)(x+6) = 0$$

$$x = -3, \ -6$$

Substitute both numbers into the linear function to find you range numbers.

$$g(-3) = -(-3) - 5 = -2$$

(-3, -2) & (-6, 1)

Write your ordered pairs.

$$g(-6) = -(-6) - 5 = 1$$

Find the intersection of the quadratic and linear functions.

$$f(x) = (x-1)^2 + 7 \quad \text{and} \quad g(x) = 3x - 4$$

Set them equal to each other.

$$(x-1)(x-1) + 7 = 3x - 4$$

Move the linear to the other side, so one side is 0.

$$\overset{FOIL}{x^2 - x - x + 1 + 7 = 3x - 4}$$

$$x^2 - 5x + 4 = 0$$

Factor.

$$(x-4)(x-1) = 0$$

Solve for x.

$$x = 4, \ 1$$

Substitute both numbers into the linear function to find you range numbers.

$$g(4) = 3(4) - 4 = 8$$

(4, 8) & (1, -1)

$$g(1) = 3(1) - 4 = -1$$

Write your ordered pairs.

Assignment:

Finding the Intersection of Quadratic and Linear Functions Worksheet