

# Today's Plan:

**Learning Target (standard):** I will use the graphing calculators to solve quadratics systems.

**Students will:** Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

**Teacher will:** Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

**Assessment:** Board work, homework check and homework assignment

**Differentiation:** Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

NAME \_\_\_\_\_

#135

## BELL RINGER

1.) Write an equation of the line that passes through the point (2, 5) and has a slope of -3.

$$y = mx + b \quad y = -3x + 11$$

$$5 = -3(2) + b$$

2.) Evaluate  $\frac{4}{x-3}$  when  $x = -9$

$$\frac{4}{-9-3} = \frac{4}{-12} = -\frac{1}{3}$$

$$5 = -b + b$$

$$b = 11$$

$$3x + y = 11$$

3.) Solve  $5x - 4 = 3x + 9$ .

$$2x - 4 = 9$$

$$\frac{2x}{2} = \frac{13}{2}$$

$$x = \frac{13}{2}$$

Find the following:

$$f(x) = -2x^2 + 3x - 4 \quad g(x) = \frac{1}{3}x - 6$$

$$f(3) - g(9) = \quad f(3) = -2(3)^2 + 3(3) - 4$$

$$= -18 + 9 - 4$$

$$f(3) = -13$$

$$g(9) = \frac{1}{3}(9) - 6$$

$$= 3 - 6$$

$$g(9) = -3$$

$$f(3) - g(9) = -13 - (-3)$$

$$= -13 + 3$$

$$f(3) - g(9) = -10$$

Find the following:

$$f(x) = -2x^2 + 3x - 4 \quad g(x) = \frac{1}{3}x - 6$$

$$2f(-1) + 3g(-27) =$$

$$f(-1) = -2(-1)^2 + 3(-1) - 4$$

$$= -2 - 3 - 4$$

$$f(-1) = -9$$

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

$$2f(-1) = -18$$

$$g(-27) = \frac{1}{3}(-27) - 6$$

$$= -9 - 6$$

$$g(-27) = -15$$

$$3g(-27) = 3(-15)$$

$$3g(-27) = -45$$

$$2f(-1) + 3g(-27) = -18 + (-45)$$

$$2f(-1) + 3g(-27) = -63$$

Use DESMOS to answer the questions:

- Where is the minimum or maximum value of the function?

x-value  
of the  
vertex

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

∴ The minimum is @  $x = \frac{3}{4}$ .

$$g(x) = -2x^2 - 5x + 3$$

∴ The maximum is @  $x = -\frac{5}{4}$ .

Use DESMOS to answer the questions:

- What is the minimum or maximum value of the function?

y-value  
of vertex

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

∴ The maximum value is  $\frac{4}{3}$ .

$$g(x) = \frac{3}{4}x^2 + 4x - 3$$

∴ The minimum value is  $-\frac{25}{3}$ .

Use DESMOS to find each of the following:

$$f(x) = 2x^2 - 3x - 4 \quad g(x) = -x^2 + x + 2$$

$$f(-3) \cdot g(2) = (23) \cdot 0$$

$$f(-3) \cdot g(2) = 0$$

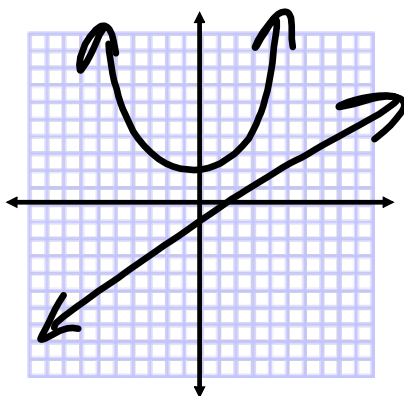
$$-2f(3) + 3g(-4) = -2(5) + 3(-18)$$

$$= -10 - 54$$

$$-2f(3) + 3g(-4) = -64$$

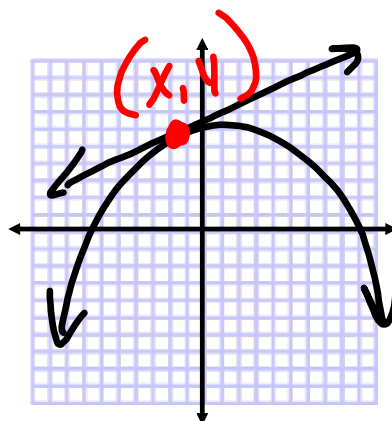
## Quadratic Systems:

Quadratic Functions & Linear Functions



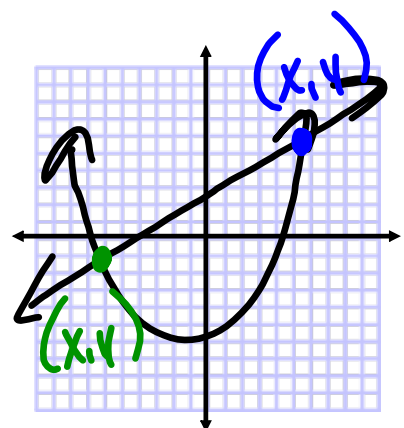
No Intersection

No Solution



Intersection

One Solution



Intersection

Two Solutions

## Evidence on Paper of using DESMOS:

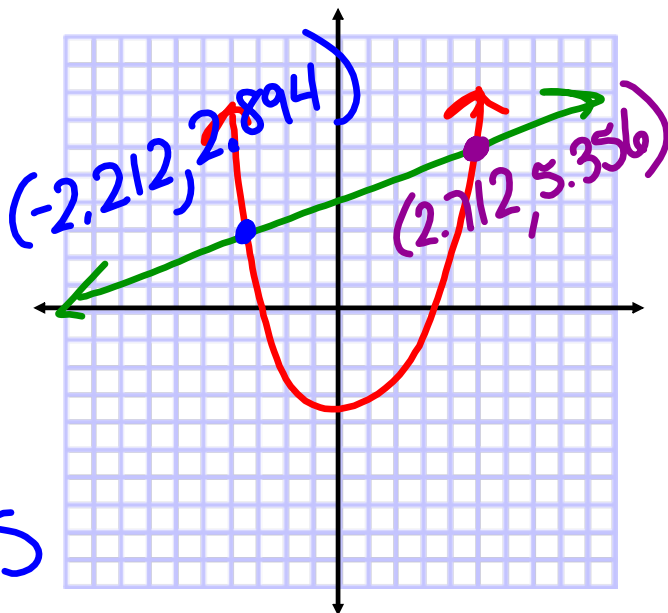
- sketch the graphs
- indicate the number of solutions
- mark the solutions on the graph
- round to 3 decimal places if necessary

## Graph.

$$f(x) = x^2 - 2$$

$$g(x) = \frac{1}{2}x + 4$$

2 solutions

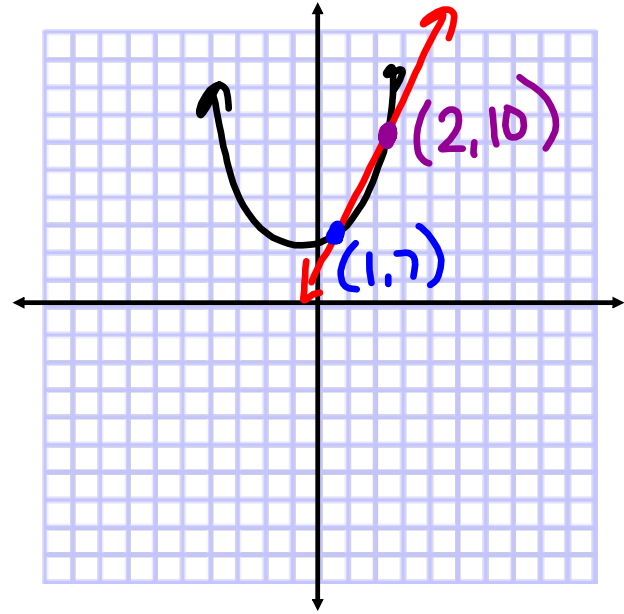


Use the graphing method to solve the system:

$$-x^2 - 3x + 2y - 10 = 0$$

$$3x - y = -4$$

2 solutions



Assignment:

Quadratic Systems

#1-8