

Today's Plan:

Learning Target (standard): I will describe quadratic equations as functions. I will perform operations on functions.


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 _____

$2f(-3) = 2(-8)$ **BELL RINGER** 

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

$2f(-3) = -16$ $f(-3) = -2(-3)^2 - 3(-3) + 1$
 $= -18 + 9 + 1$

2.) A car drives 65 miles per hour for 2 hours. How far did the car travel?

$f(-3) = -8$ $d = r \cdot t$
 $d = 65(2)$
 $d = 130 \text{ mi}$

3.) Solve $\frac{x}{3} + 6 = -6$

$x + 18 = -18$

$x = -36$

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

$2f(-3) =$

Solve by factoring.

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

$$\begin{array}{c} 5 \\ \wedge \\ 5 - 1 = 4 \end{array}$$

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

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

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

$$x+5=0 \quad x-1=0$$

$$x = -5 \quad x = 1$$

$$x = -5, 1$$

Solve by factoring.

$$\frac{-2x^2}{-2x} + \frac{6x}{-2x} = 0$$

$$-2x(x-3) = 0$$

$$-2x = 0 \quad x - 3 = 0$$

$$x = 0 \quad x = 3$$

$$x = 0, 3$$

Solve by completing the square.

$$7x^2 + 14x - 51 = 5$$

$$\frac{7x^2 + 14x}{7} = \frac{56}{7} \quad \frac{2}{2} = 1^2 = 1$$

$$x^2 + 2x + 1 = 8 + 1$$

$$\sqrt{(x+1)^2} = \sqrt{9}$$

$$x+1 = 3, -3$$

$$x = 2, -4$$

$$I_x: (2, 0), (-4, 0)$$

Tell which direction the parabola opens. Find the vertex.

$$f(x) = 4x^2 - 24x + 1$$

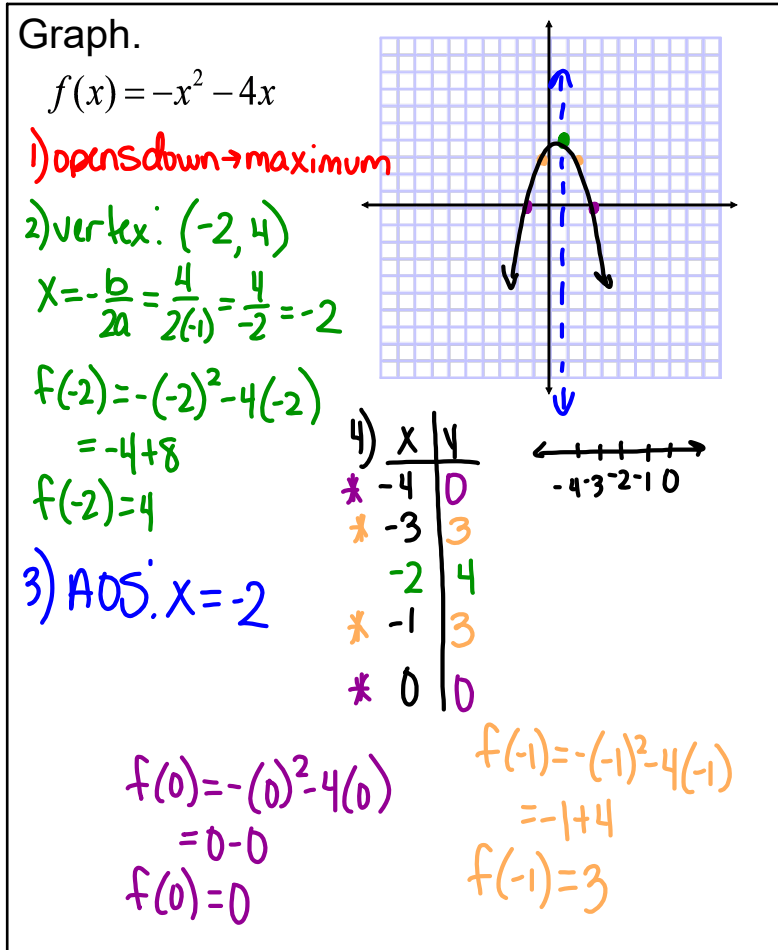
1) opens: **up** → **minimum**

2) vertex: **(3, -35)**

$$x = -\frac{b}{2a} = \frac{24}{2(4)} = \frac{24}{8} = 3$$

$$\begin{aligned} f(3) &= 4(3)^2 - 24(3) + 1 \\ &= 36 - 72 + 1 \end{aligned}$$

$$f(3) = -35$$



Performing Operations on Functions:

- Evaluate each function separately using appropriate function notation

$$f(x) = 2x - 3; f(-4) = ?$$

- Once each function has been evaluated, perform the indicated operation on the two functions

$$g(x) = -x^2 + 2x - 1; g(-2) = ?$$

- Be sure to label each step with appropriate function notation and do not forget to label the final result

$$f(-4) - g(-2) = ?$$

Evaluate.

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

$$f(2) + g(1)$$

$$g(1) = 4(1)^2 - 6(1) + 2$$

$$= 4 - 6 + 2$$

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

$$= -8 + 6 - 1$$

$$g(1) = 0$$

$$f(2) = -3$$

$$f(2) + g(1) = -3 + 0$$

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

Evaluate.

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

$$g(-1) - f(3)$$

$$g(-1) = 4(-1)^2 - 6(-1) + 2$$

$$= 4 + 6 + 2$$

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

$$= -18 + 9 - 1$$

$$g(-1) = 12$$

$$f(3) = -10$$

$$g(-1) - f(3) = 12 - (-10)$$

$$= 12 + 10$$

$$g(-1) - f(3) = 22$$

Evaluate.

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

$$2f(-1) \cdot g(3)$$

$$g(3) = 4(3)^2 - 6(3) + 2 \\ = 36 - 18 + 2$$

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

$$g(3) = 20$$

$$f(-1) = -6$$

$$2f(-1) \cdot g(3) = -12 \cdot 20$$

$$2f(-1) = 2(-6)$$

$$2f(-1) \cdot g(3) = -240$$

$$2f(-1) = -12$$

Assignment:

Operations on Functions 1

#1-6

* Show ALL steps and label using appropriate function notation. *