

Handout Graph Paper

Home: _____

Problems on Last Slide

Date: _____

<http://www.mathvizza.com>Bell WorkDirections: Please expand.

1. $(x+1)^2$

$x^2 + 2x + 1$

2. $(x-1)^2$

$x^2 - 2x + 1$

3. $(3x+5)^2$

$9x^2 + 30x + 25$

4. $(5x+7)^2$

$25x^2 + 70x + 49$

5. $(x+y)^2$

$x^2 + 2xy + y^2$

6. $(3x+2y)^2$

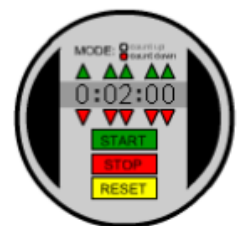
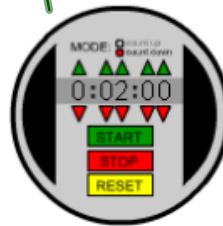
$9x^2 + 12xy + 4y^2$

7. $(x^3+1)^2$

$x^6 + 2x^3 + 1$

8. $(x+1)^2$

$x^2 + 2x + 1$



Objectives

1. The students will convert from vertex to standard form.
2. The students will find the vertex of a quadratic function that is written in vertex form.
3. The students will find the vertex of a quadratic function that is in standard form.
4. The students will graph quadratic functions in vertex and standard form.

Please convert the following to standard form.

$$y = ax^2 + bx + c$$

$$(x-4)(x-4)$$

$$(x+3)(x+3)$$

1. $g(x) = 3(x-4)^2 + 3$

$$g(x) = 3(x^2 - 8x + 16) + 3$$

$$= 3x^2 - 24x + 48 + 3$$

$$g(x) = 3x^2 - 24x + 51$$

$$-\frac{b}{2a} = \frac{-(-24)}{2(3)} = \frac{24}{6} = 4$$

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

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

$$= -x^2 - 2x - 1$$

4, 3

2. $y = -2(x+3)^2 + 3$

$$y = -2(x^2 + 6x + 9) + 3$$

$$y = -2x^2 - 12x - 18 + 3$$

$$y = -2x^2 - 12x - 15$$

4. $g(4) =$

$$3(4)^2 - 24(4) + 51$$

$$3(16) = 48 + 51$$

$$48 - 96 + 51$$

$$-48 + 51$$

$$= 3$$

$$f(x)=a|x-h|+k$$

$$f(x)=a[x-h]+k$$

$$f(x)=a\sqrt{x-h}+k$$

$$f(x)=a(x-h)^2+k$$

$$2(x+4)^2-3$$
$$2(x-(-4))+(-3)$$

$$f(x)=a(x-h)^3+k$$

Vertex -

max/min -

Vertex Form

$$y = 4(x-2)^2 + 1$$

$$y = a(x-h)^2 + k$$

Vertex

h, k

$d, 1$

axis

$x=h$

Standard Form

$$y = ax^2 + bx + c$$

Vertex

$$\left(-\frac{b}{2a}, f\left(-\frac{b}{2a} \right) \right)$$

Finding the Vertex with Standard Form

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

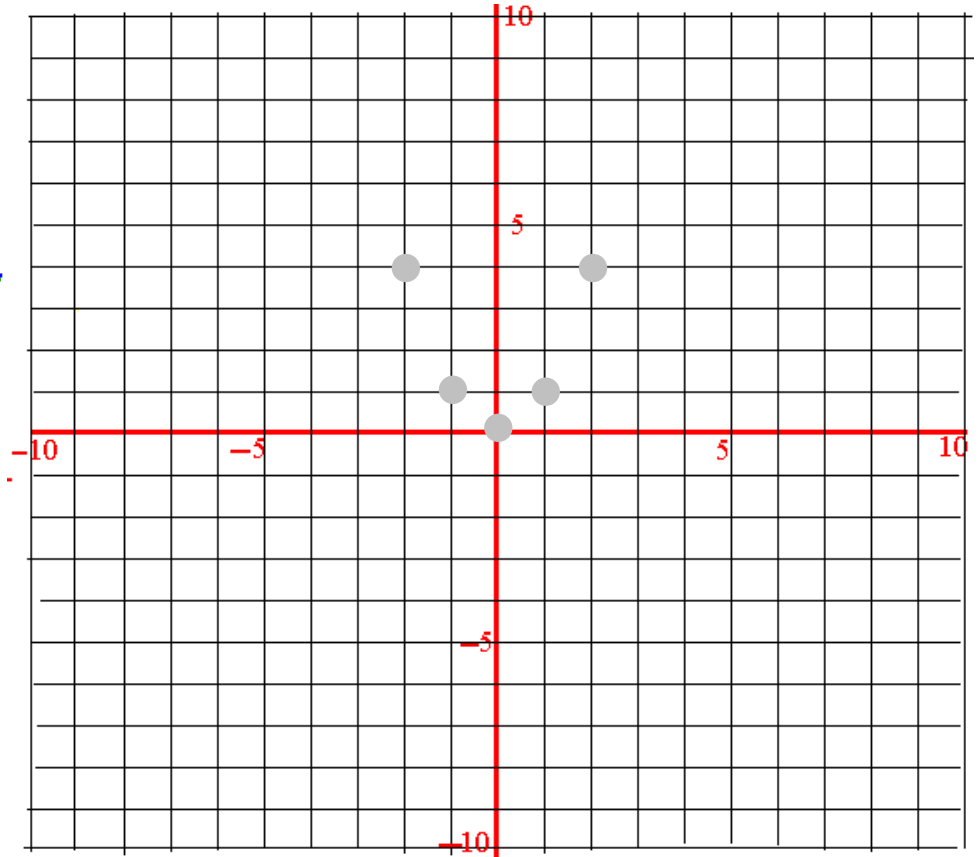
$$f(x) = -1.5x^2 - 3x + 1.5$$

$$\begin{aligned} a &= -1.5 & x &= \frac{-(-3)}{2(-1.5)} = \frac{3}{-3} = -1 \\ b &= -3 \\ c &= +1.5 \end{aligned}$$

$$\begin{aligned} y &= f(-1) \\ &= -1.5(-1)^2 - 3(-1) + 1.5 \\ &= -1.5(1) + 3 + 1.5 \\ &= \cancel{-1.5} + 3 + \cancel{1.5} \\ &= 3 \end{aligned}$$

(-1, 3)

Q1111 a: _____
(h,k): _____



Directions: Please identify a, h & k then graph the following. *also graph axis of sym.*

1. $f(x)=2(x-3)^2-5$

2. $f(x)=2(x+3)^2-5$

3. $f(x)=-(x+1)^2-5$

4. $f(x)=\frac{1}{2}x^2+1$

$\frac{1}{2}(x-d)^2+1$

Directions: For the following, please

1. determine if the graph opens up or down
2. determine if the graph has a maximum or a minimum
3. compute the vertex using the formula
4. state the max or minimum
5. graph the function

1. $f(x)=2x^2-6x+1$

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

3. $b(x)=-x^2+4x$

4. $g(x)=(2x+3)(x-5)$

5. $m(x)=3x(x+3)$

