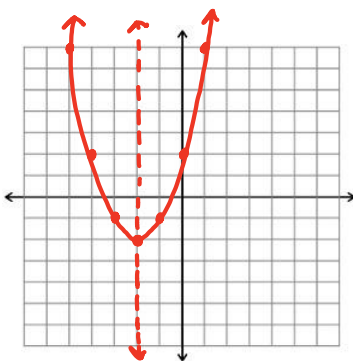


Unit 2A Day 4 Notes – Graphing Quadratics

Date: \_\_\_\_\_

1. Domain: *all x-values*
2. Range: *all y-values*
3. Axis of Symmetry: *vertical line that cuts the parabola into two equal parts*
4. Vertex: *is the lowest or highest point of the parabola.*
5. y-intercept: *crosses the y-axis (x is 0)*
6. x-intercept(s): *crosses the x-axis (y is 0)*

Standard Form



$a x^2 + b x + c$   
 $y = 1x^2 + 4x + 2 \quad x = \frac{-b}{2a} = \frac{-4}{2(1)} = \frac{-4}{2} = \boxed{-2}$

Domain: All Real #'s |  $(-\infty, \infty)$

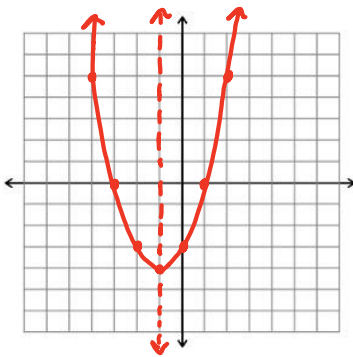
Range:  $y \geq -2$

Axis of Symmetry:  $x = -2$  *(opens up)*

Vertex:  $(-2, -2)$

y-intercept:  $(0, 2)$

Factored Form



*FOIL or BOX METHOD*

$m$	$x$	$-1$
$x$	$x^2$	$-x$
$3$	$3x$	$-3$

$y = (x - 1)(x + 3) \rightarrow x^2 + 2x - 3, \quad x = \frac{-b}{2a} = \frac{-2}{2(1)} = \frac{-2}{2} = \boxed{-1}$

Domain: All Real #'s

Range:  $y \geq -4$

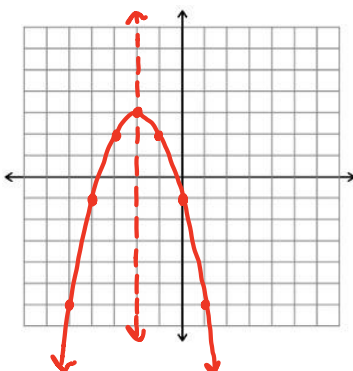
Axis of Symmetry:  $x = -1$

Vertex:  $(-1, -4)$

y-intercept:  $(0, -3)$

x-intercept(s):  $(-3, 0) (1, 0)$

Vertex Form



$y = -(x + 2)^2 + 3 \rightarrow -x^2 - 4x - 1 \quad x = \frac{4}{2(-1)} = \frac{4}{-2} = -2$

Domain: All Real #'s

Range:  $y \leq 3$

Axis of Symmetry:  $x = -2$  *(opens down)*

Vertex:  $(-2, 3)$

y-intercept:  $(0, -1)$