Unit

Pre Requisite 2

Learning Intention:

Given a quadratic function students will graph the function using technology and identify it's key features.

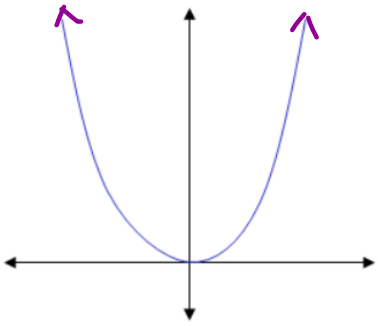
Success Criteria:

I will be able to identity the vertex, x-intercepts, and line of symmetry in a parabola.

I will be able to state the domain and range of a quadratic function given a parabola.

Vocabulary:

Quadratic parent function



$y = x^2$

Domain: all reals numbers

Range: positive reals numbers

Standard form

$y=ax^2+bx+c$

Vertex form

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

(h,k) is the vertex

Intercept form

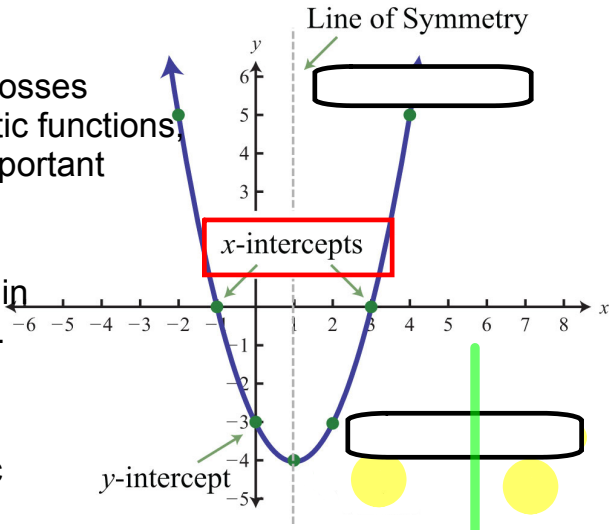
$y=a(x-p)(x-q)$

Vocabulary:

Intercepts - where a function crosses (intercepts) an axis. For quadratic functions, the x-intercepts are the most important

Line of Symmetry -The line of symmetry divides the parabola in half and passes through vertex.

Vertex - the minimum or maximum point of a quadratic function.



Graph using your graphing calculator.
Sketch the graph

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

Identify the following:

x-intercepts

y-intercepts

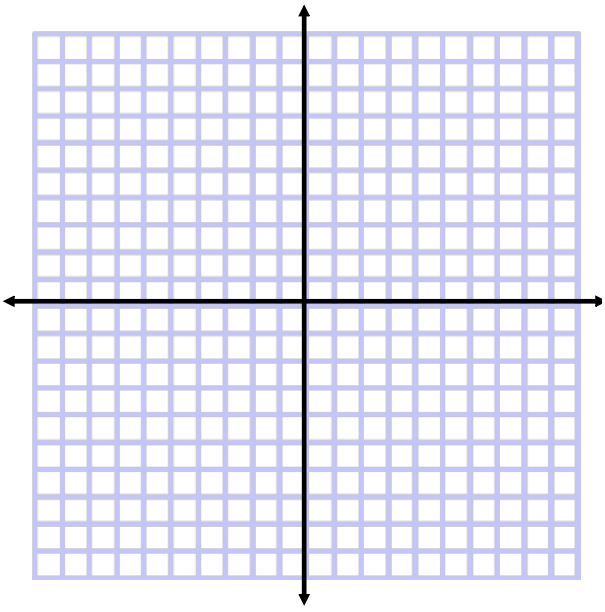
vertex point

max or min value

line of symmetry

Domain

Range



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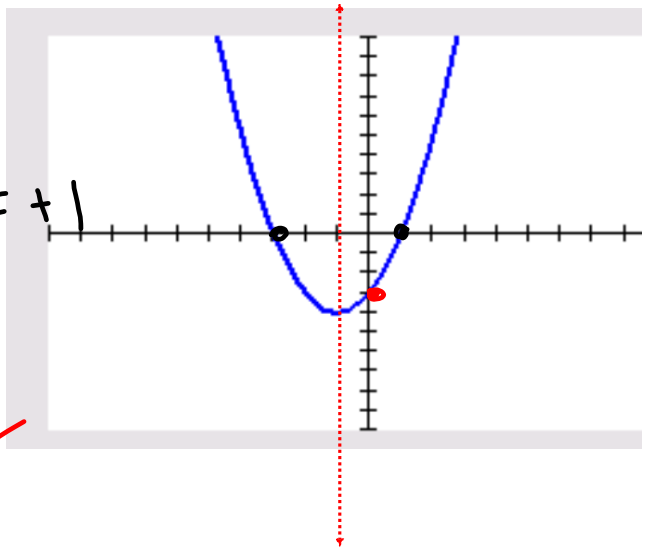


Identify the following:

x-intercepts $x = -3$; $x = +1$

y-intercepts $y = -3$

vertex point $(-1, -4)$

max or min value min -4

line of symmetry $x = -1$

Domain $(-\infty, \infty)$

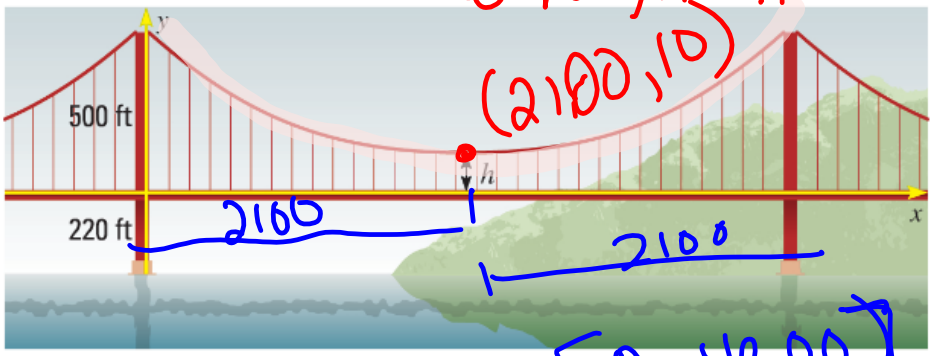
Range $[-4, \infty)$

Example 9

57. **GOLDEN GATE BRIDGE** Each cable joining the two towers on the Golden Gate Bridge can be modeled by the function

$$y = \frac{1}{9000}x^2 - \frac{7}{15}x + 500$$

where x and y are measured in feet. What is the height h above the road of a cable at its lowest point? The height h is 10 ft.



Domain [0, 4200]
Range: [10, 500]