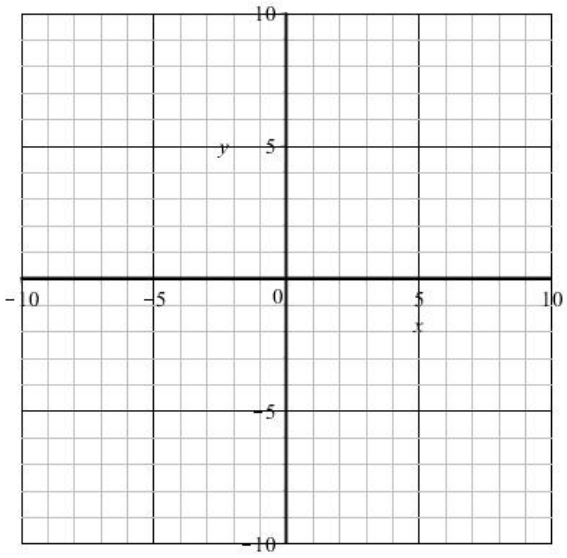
Math 1314 – College Algebra
Section 5.1 Quadratic Functions

- A quadratic function is a second-degree polynomial function in one variable. Suppose $a, b, c \in \mathbb{R}, a \neq 0$.

Form	Vertex	Axis of Symmetry	If $a > 0$	If $a < 0$
General:				
Standard:				

- Domain:

Ex: Find the vertex and graph $f(x) = -2(x+1)^2 + 3$. Give the domain and range. Give the x- and y-intercepts, if there are any.

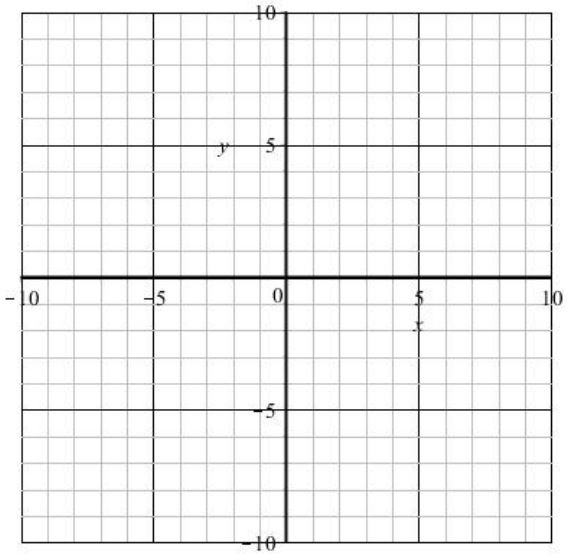


Ex: Find the standard form and general form of the parabola with vertex $(2,9)$ that passes through the point $(5,27)$.

Ex: Find the general form of the parabola with intercepts $(2,0)$, $(-1,0)$, and $(0,-6)$.

- There are times when we are given one form of a quadratic and it is useful to convert to the other form.
  Ex: Convert $f(x) = -x^2 - 6x - 8$ to standard form.

Ex: Find the vertex and sketch $g(x) = 2x^2 + 16x + 33$. Give the domain and range. Give the x- and y-intercepts, if there are any.



Ex: A rancher wants to enclose a rectangular partitioned corral with 1800 feet of fencing. What dimensions of the corral would enclose the largest possible area? Find the maximum area.

Ex: The Municipal Transit Authority serves 150,000 commuters daily when the fare is $1.30. Market research has determined that every penny decrease will result in 1,000 new riders. What is the maximum income?

Ex: Find two numbers whose sum is 23 and whose product is a maximum.