Math 20-2: Properties of Quadratic Functions

Objective: Graph a quadratic function.

Objective: Identify properties of quadratic functions: vertex, x-intercepts, y-intercept and an equation for the axis of symmetry.

What we saw in other math classes (linear function):

Given: $y = 2x - 8$

- Find at least six points (some positive x-values and some negative x-values, where x is zero) on the line using a table or mapping diagram:

x	y
-2	-12
-1	-10
0	-8
1	-6
2	-4
3	
4	
5	2

2(1) - 8

2(2) - 8

2(5) - 8

Calculator Skills:

Window – tell your story

Trace – key in the x value, ENTER to find y value... repeat for more data

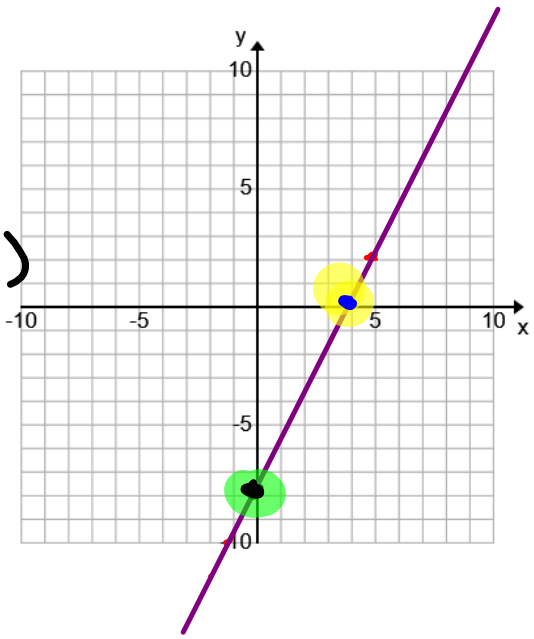
Table – show x and y values, up and down arrows

Table Setup – how to tell calculator what to start the table at and increase by

MODE: "Graph-Table" vs "Full"

Plot the points on a grid.

- Draw the line through the points.
- Identify the x-intercept. (4, 0)
- Identify the y-intercept. (0, -8)
- Use your calculator to see what you already know:
  - Graphing
  - Table of Values
  - Tracing

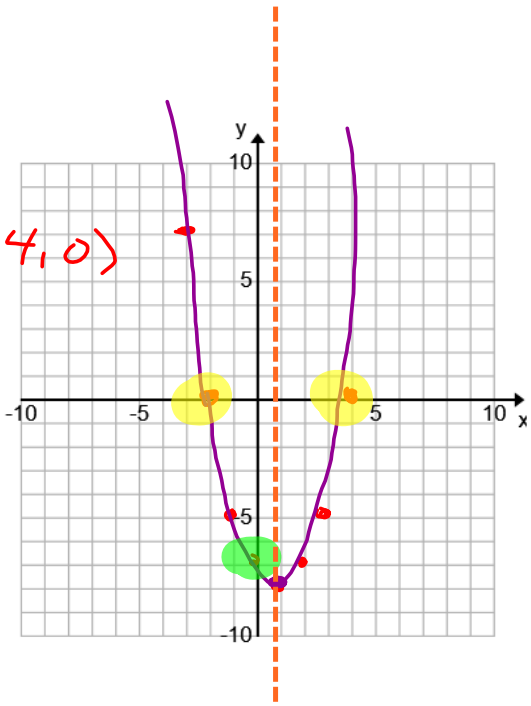


Something different, but same kind of skills (quadratic function):
Given: $y = x^2 - 2x - 8$

- Find at least six points (some positive x-values and some negative x-values, where x is zero) on the line using a table or mapping diagram:

x	y
-3	7
-2	0
-1	-5
0	-8
1	-9
2	-8
3	-5
4	0

- Plot the points on a grid.
- Draw the curved line through the points.
- Identify the x-intercept. (-2,0) (4,0)
- Identify the y-intercept. (0,-8)
- Identify the lowest point on the graph. (-1,-9)
- Draw a line the cuts the graph in half so that "the left side and right side would match"
- Use your calculator to see what you already know:
  - Graphing
  - Table of Values
  - Tracing

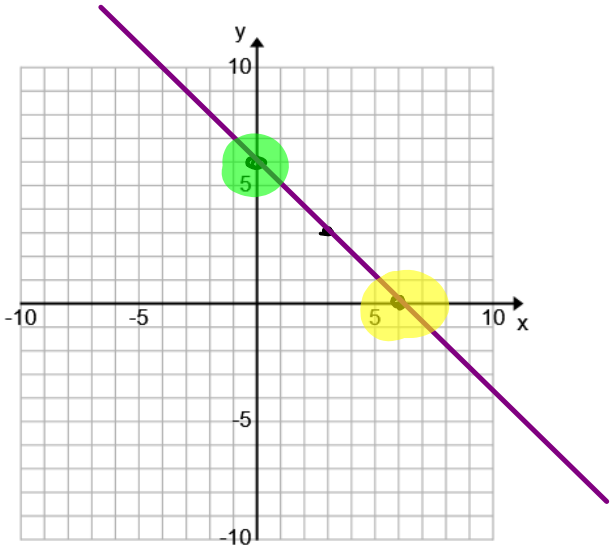


WINDOW [MIN, MAX, SCALE]
X [-10, 10, 1]
Y [-10, 10, 1]

Another what we saw before:
Given: $y = -x + 6$

- Find at least six points (some positive x-values and some negative x-values, where x is zero) on the line using a table or mapping diagram:
- Plot the points on a grid.
- Draw the line through the points.
- Identify the x-intercept. (6, 0)
- Identify the y-intercept. (0, 6)
- Use your calculator to see what you already know:
  - Graphing
  - Table of Values
  - Tracing

X	Y
0	6
-1	7
1	5
3	3
6	0

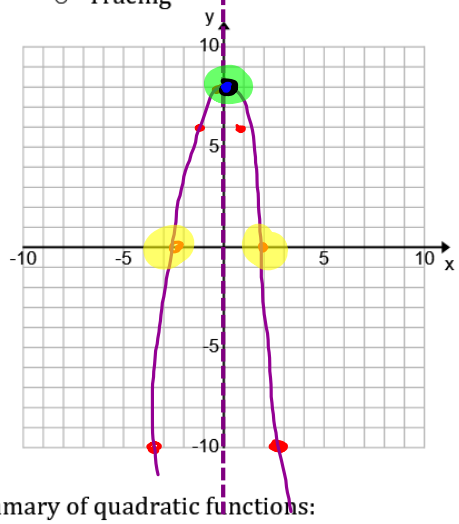


1.1 Quadratic Properties.2020

Another something different, but same kind of skills:

Given: $y = -2x^2 + 8$

- Find at least six points (some positive x-values and some negative x-values, where x is zero) on the line using a table or mapping diagram:
- Plot the points on a grid.
- Draw the curved line through the points.
- Identify the x-intercept. (-2, 0) (2, 0)
- Identify the y-intercept. (0, 8)
- Identify the highest point on the graph. (0, 8)
- Draw a line the cuts the graph in half so that "the left side and right side would match"
- Use your calculator to see what you already know:
  - Graphing
  - Table of Values
  - Tracing



Summary of quadratic functions:

What in the equation results in being quadratic? x^2

What are some graph properties of quadratics?

maximum or minimum pts

Symmetry Left = Right

x-intercepts

y-intercept