

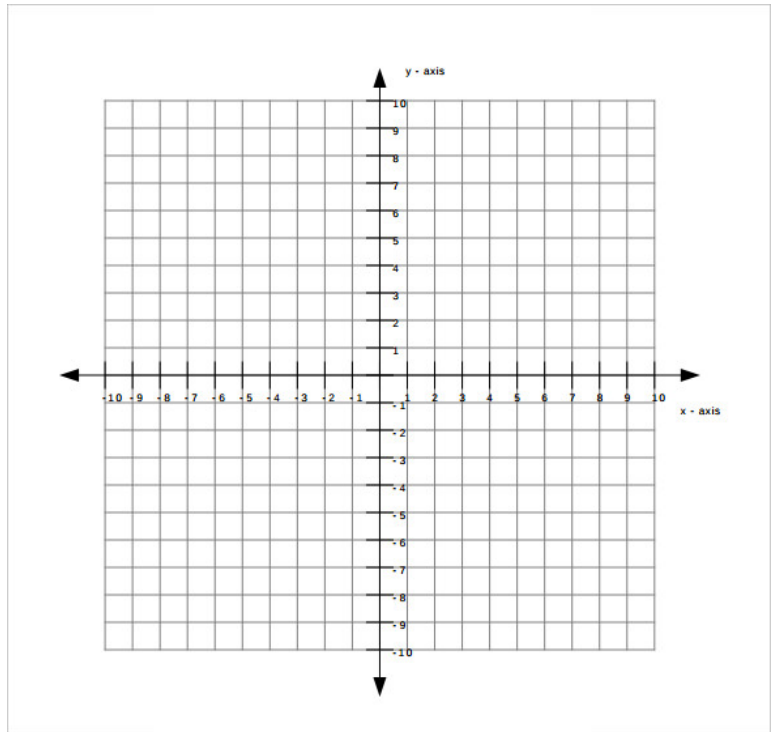
# Exploration: Graphs of quadratic equations

## No-Desmos

I. Create a table of values, and then graph the function

$$f(x) = x^2 - 1 \quad \text{for} \quad -3 \leq x \leq 3.$$

$x$	$f(x)$
-3	
-2	
-1	
0	
1	
2	
3	

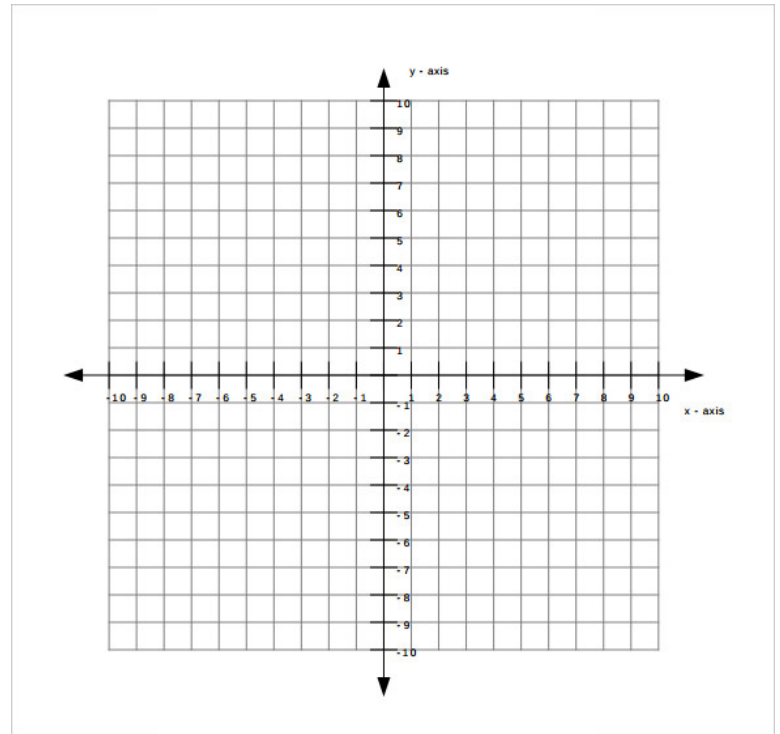


1. Where does the function intercept the y-axis?
  - a. Can you obtain this from the quadratic function equation?
  
2. Where does the function intercept the x-axis?
  - a. Can you find these using algebraic process?
  
3. What is the axis-of-symmetry?
  - a. Can you see it from the graph? Table?
  - b. Write the y-coordinate of the lowest point on the graph of  $f(x)$

**II. Create a table of values, and then graph the function**

$$f(x) = (x - 4)(x + 2) \quad \text{for} \quad -3 \leq x \leq 5$$

x	f(x)
-3	
-2	
-1	
0	
1	
2	
3	
4	
5	

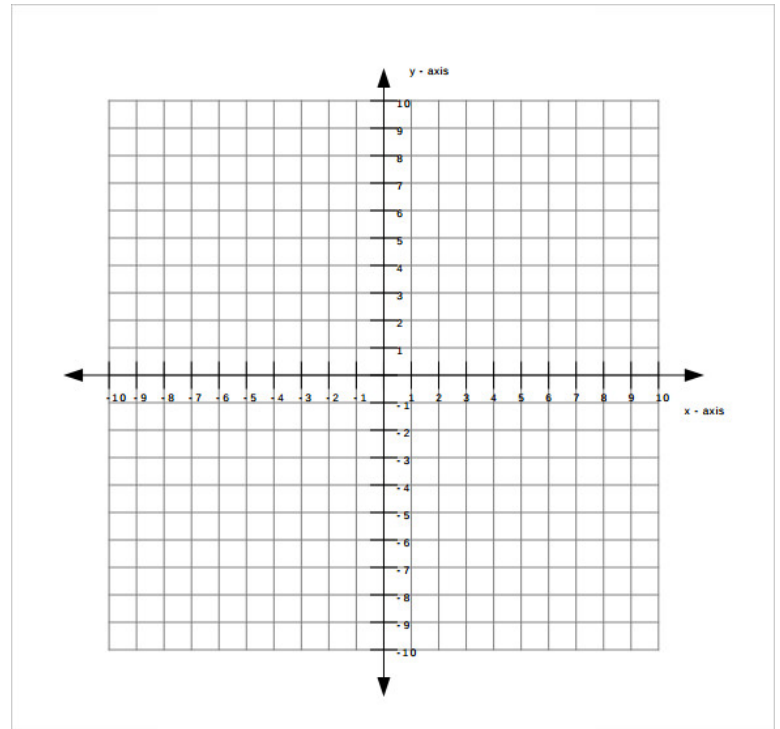


1. For what x value(s) is f(x) equal to zero?
2. What is the axis of symmetry?
3. What is the minimum value of f(x)?

**III. Create a table of values, and then graph the function**

$$g(x) = -x^2 - 2x + 8 \quad \text{for} \quad -5 \leq x \leq 3$$

x	g(x)
-5	
-4	
-3	
-2	
-1	
0	
1	
2	
3	

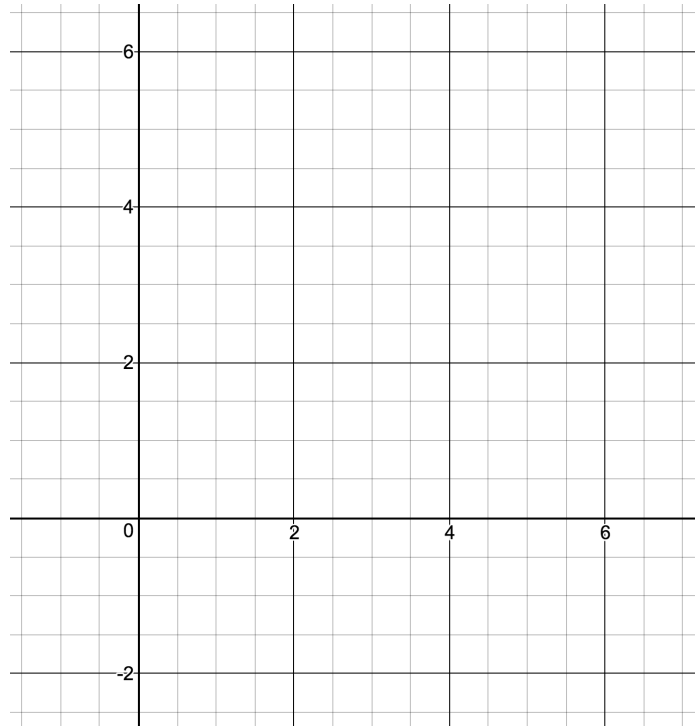


1. What is the y-intercept of the function?
2. How and why is this graph different compared to the previous two?

**IV. Create a table of values, and then graph the function**

$$m(x) = 0.5(x - 3)^2 - 2 \quad \text{for} \quad -1 \leq x \leq 7$$

x	m(x)
-1	
0	
1	
2	
3	
4	
5	
6	
7	



1. What is the y-intercept of the function?

2. What are the x-intercepts of the function?

**V. Draw the function q(x) on the same axes. Use different colors.**

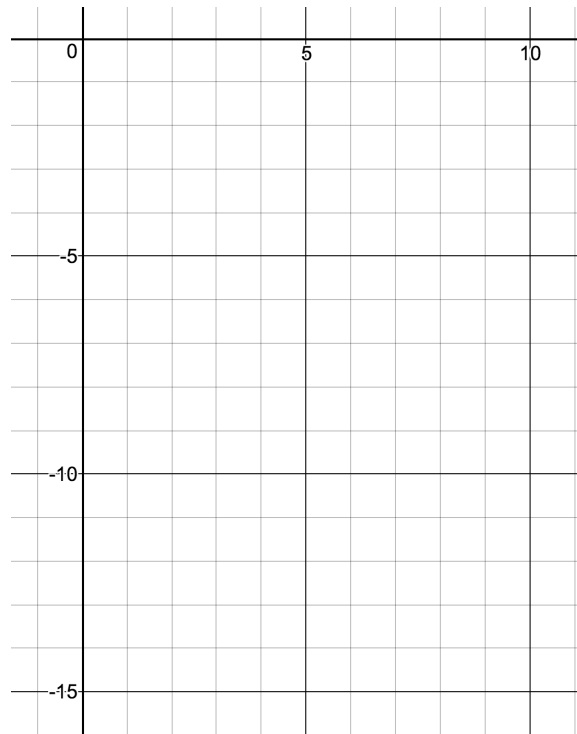
$$q(x) = 2(x - 3)^2 - 2 \quad \text{for} \quad 1 \leq x \leq 5$$

x	1	2	3	4	5
q(x)					

**VI. Create a table of values, and then graph the function**

$$h(x) = -0.5(x - 3)^2 - 2 \quad \text{for} \quad -1 \leq x \leq 8$$

x	h(x)
-1	
0	
1	
2	
3	
4	
5	
6	
7	
8	



1. What is the y-intercept of the function?
  
  
  
  
  
  
  
  
  
  
2. What are the x-intercepts of the function?

**VII. Look back at the last 3 examples. Any insights and observations?**

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