

Math 48A, Lesson 2: Graphs Popular Functions

1. GRAPH LINEAR FUNCTION (TYPE OF POWER FUNCTION)

Consider the linear function

$$f(x) = -1 - \frac{5}{2}x$$

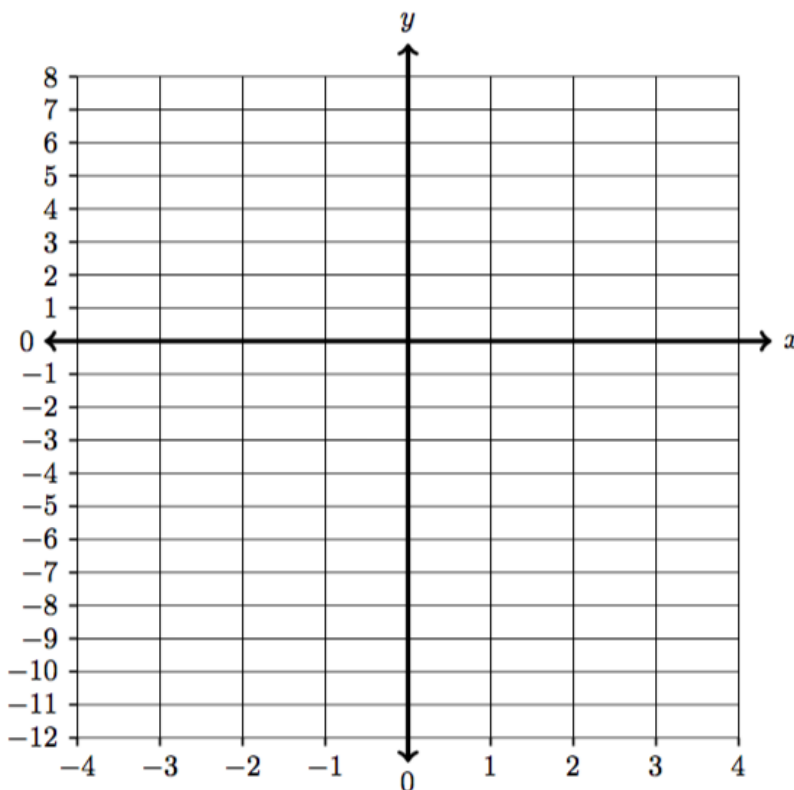
Fill out the table below. Then use that table to graph the given linear function.

A. Fill in the table below

B. Plot these points on the axis provided

C. Interpolate between the points you plotted to create the graph of this function

<i>Input</i>	<i>Output values</i>
x	$f(x) = -1 - \frac{5}{2}x$
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	



1D. What is the slope of the line $f(x) = -1 - \frac{5}{2}x$?

(Write more about how the slope shows up in your graph from parts 1A – 1C).

1E. What is the x–intercept of the line $f(x) = -1 - \frac{5}{2}x$?

(Write about how the x-intercept shows up in your graph from parts 1A – 1C).

1E. What is the y–intercept of the line $f(x) = -1 - \frac{5}{2}x$?

(Write about how the y-intercept shows up in your graph from parts 1A – 1C).

1G. What is the domain of the line $f(x) = -1 - \frac{5}{2}x$?

(Write about how the domain shows up in your graph from parts 1A – 1C).

1H. What is the range of the line $f(x) = -1 - \frac{5}{2}x$?

(Write about how the range shows up in your graph from parts 1A – 1C).

2. ABSOLUTE VALUE FUNCTIONS

Consider the absolute value function

$$f(x) = |x|$$

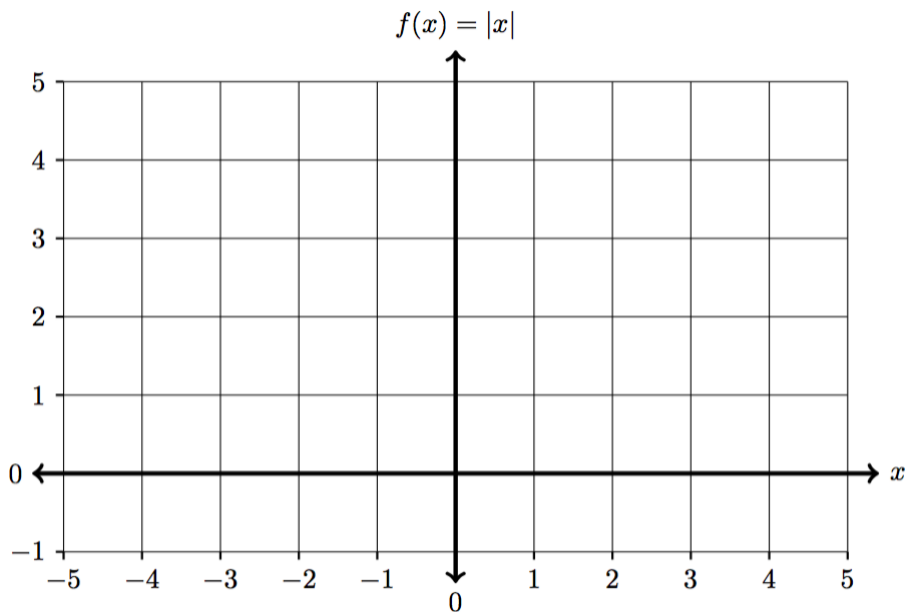
Fill out the table below. Then use that table to graph the absolute value function.

A. Fill in the table below

B. Plot these points on the axis provided

C. Interpolate between the points you plotted to create the graph of this function

<i>Input</i>	<i>Output</i>
x	$f(x) = x $
-5	
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	
5	



2D. What is the x -intercept of the absolute value function $f(x) = |x|$?
(Write about how the x -intercept shows up in your graph from parts 2A – 2C).

2E. What is the y -intercept of the absolute value function $f(x) = |x|$?
(Write about how the y -intercept shows up in your graph from parts 2A – 2C).

2F. Why does the graph of $f(x) = |x|$ never go below the x -axis?

2G. What is the domain of the absolute value function $f(x) = |x|$?
(Write about how the domain shows up in your graph from parts 2A – 2C).

2H. What is the range of the absolute value function $f(x) = |x|$?
(Write about how the range shows up in your graph from parts 2A – 2C).

3. QUADRATIC FUNCTIONS

TYPE OF POWER FUNCTION

Consider the quadratic function

$$f(x) = x^2$$

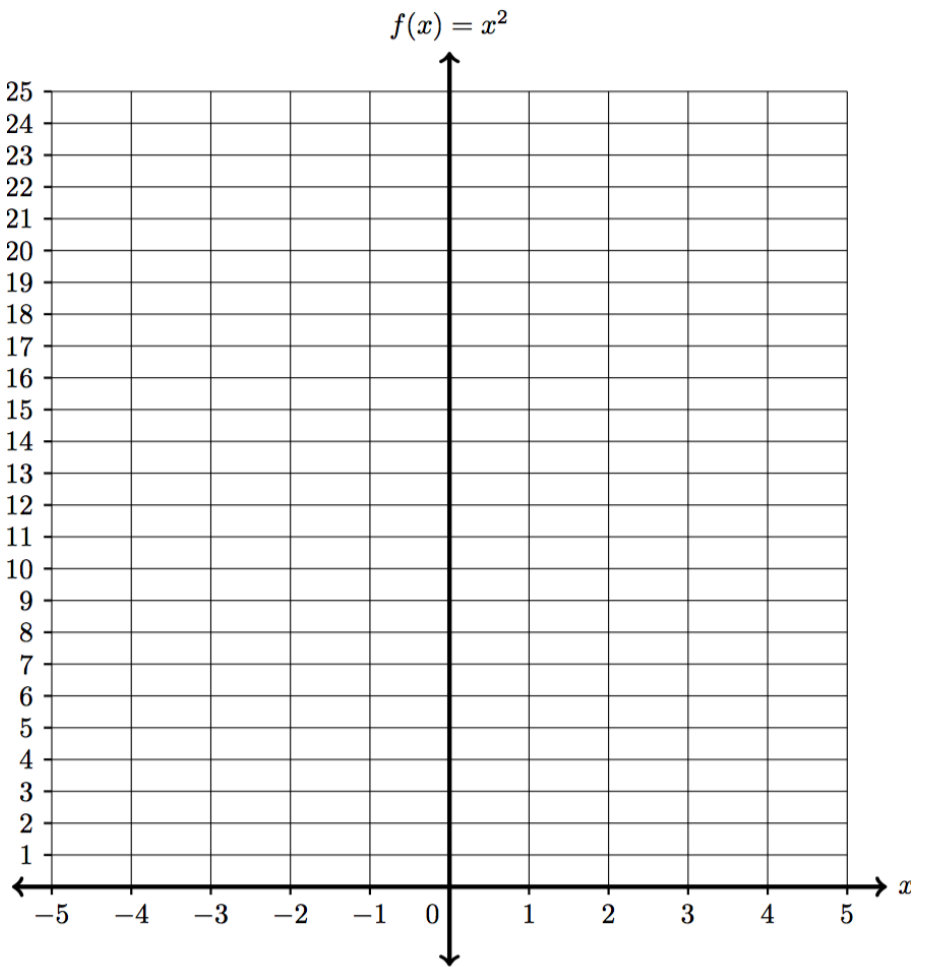
Fill out the table below. Then use that table to graph the quadratic function.

A. Fill in the table below

B. Plot these points on the axis provided

C. Interpolate between the points you plotted to create the graph of this function

<i>Input</i>	<i>Output</i>
x	$f(x) = x^2$
-5	
-4	
-3	
-2	
-1	
0	
1	
2	
3	
4	
5	



3D. What is the x -intercept of the quadratic function $f(x) = x^2$?
(Write about how the x -intercept shows up in your graph from parts 3A – 3C).

3E. What is the y -intercept of the quadratic function $f(x) = x^2$?
(Write about how the y -intercept shows up in your graph from parts 3A – 3C).

3F. Why does the graph of $f(x) = x^2$ never go below the x -axis?

3G. What is the domain of the quadratic function $f(x) = x^2$?
(Write about how the domain shows up in your graph from parts 3A – 3C).

3H. What is the range of the quadratic function $f(x) = x^2$?
(Write about how the range shows up in your graph from parts 3A – 3C).

4. SQUARE ROOT FUNCTION

TYPE OF ROOT FUNCTION

Consider the absolute value function

$$f(x) = \sqrt{x}$$

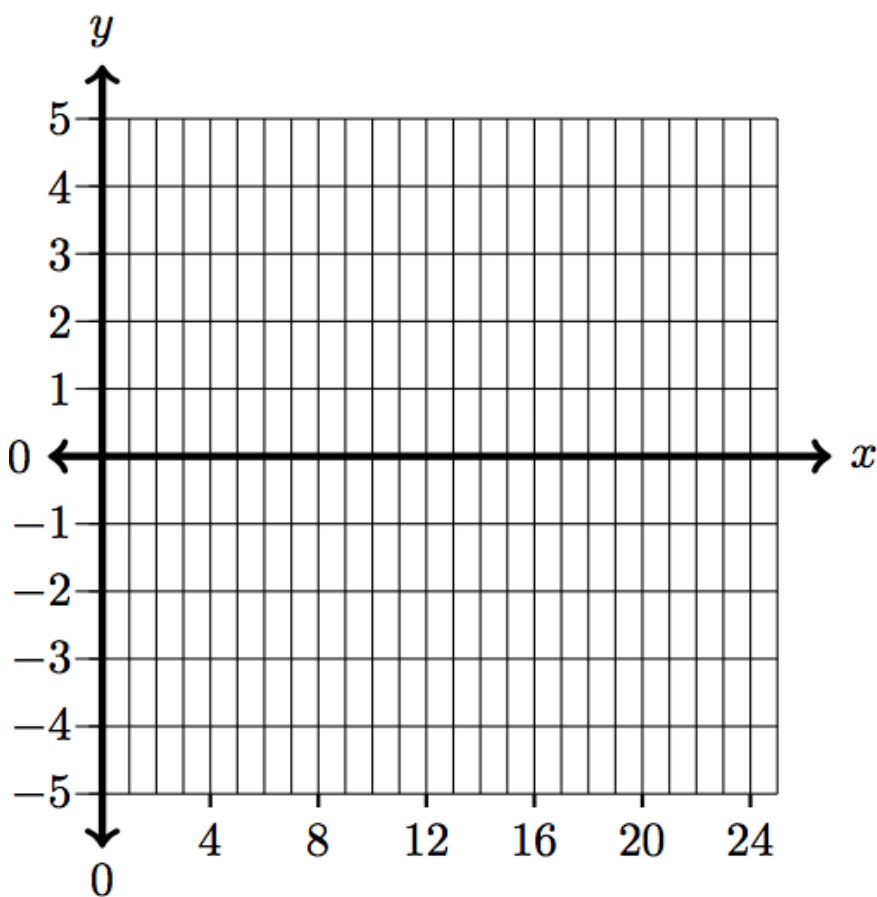
Fill out the table below. Then use that table to graph the quadratic function.

A. Fill in the table below

B. Plot these points on the axis provided

C. Interpolate between the points you plotted to create the graph of this function

<i>Input</i>	<i>Output</i>
x	$f(x) = \sqrt{x}$
-1	
0	
1	
4	
9	
16	
25	



4D. What is the x–intercept of the square root function $f(x) = \sqrt{x}$?
(Write about how the x-intercept shows up in your graph from parts 4A – 4C).

4E. What is the y–intercept of the square root function $f(x) = \sqrt{x}$?
(Write about how the y-intercept shows up in your graph from parts 4A – 4C).

4F. Why does the graph of $f(x) = \sqrt{x}$ never go below the x-axis?

4G. What is the domain of the square root function $f(x) = \sqrt{x}$?
(Write about how the domain shows up in your graph from parts 3A – 3C).

4H. What is the range of the square root function $f(x) = \sqrt{x}$?
(Write about how the range shows up in your graph from parts 4A – 4C).