

Objective: Determine key features of quadratic functions using a table of values.

Prior Knowledge

Use the words in the box to complete each statement about quadratic functions.

larger maximum minimum smaller

If a function is increasing on an interval, the y values are getting larger.

If a function is decreasing on an interval, the y values are getting smaller.

If the graph of a quadratic function opens down, the vertex is a maximum.

If the graph of a quadratic function opens up, the vertex is a minimum.



Objective: Determine key features of quadratic functions using a table of values.

Ex) The values in the table represent a quadratic function. Find each interval.

x	$f(x)$
-5	5
-1	-2
2	-2
5	2.5
7	8

In which interval of the domain does the vertex occur? Is the vertex a maximum or minimum?

$[-1, 2]$; minimum

"only"

In which interval of the domain does the function increase?

$[2, 7]$

"only"

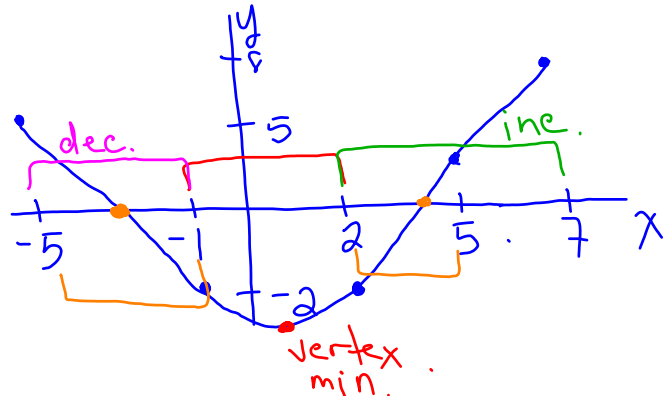
In which interval of the domain does the function decrease?

$[-5, -1]$

In which interval(s) of the domain would there be a zero?

$[-5, -1] \cup [2, 5]$

① strategy:
graph the points



Objective: Determine key features of quadratic functions using a table of values.

Ex) The values in the table represent a quadratic function. Find each interval.

In which interval of the domain does the maximum or minimum of the function occur?

vertex?

[5, 9]

"only"

In which interval of the domain does the function increase?

[-5, 5]

"only"

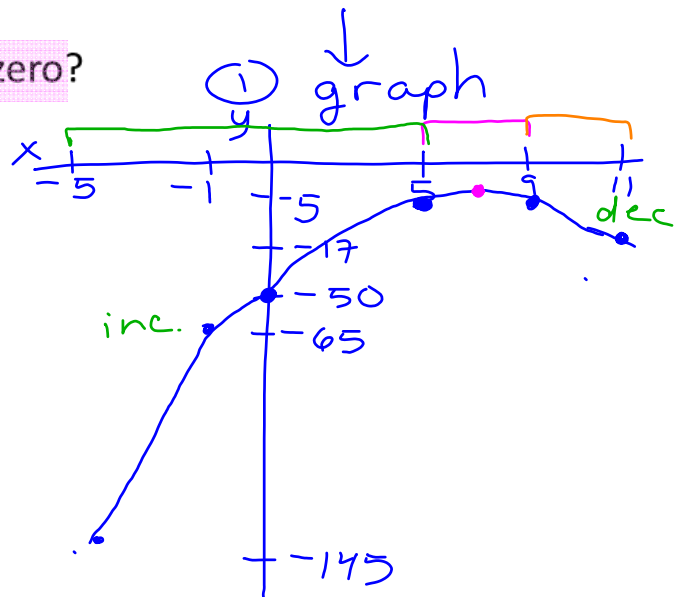
In which interval of the domain does the function decrease?

[9, 11]

In which interval(s) of the domain would there be a zero?

none

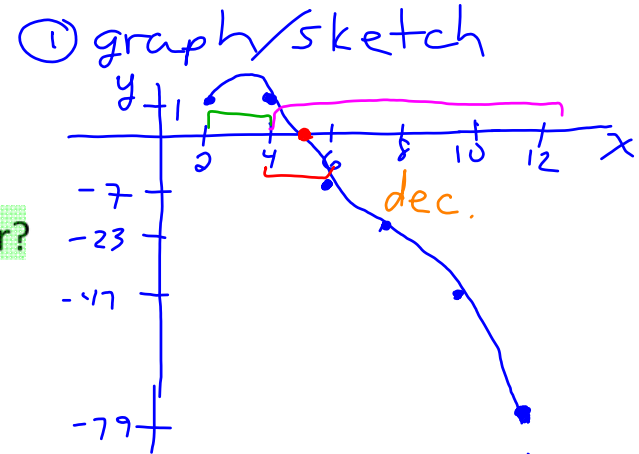
x	$g(x)$
11	-17
9	-5
5	-5
0	-50
-1	-65
-5	-145



Objective: Determine key features of quadratic functions using a table of values.

Ex) The values in the table represent a quadratic function. Find each interval.

x	2	4	6	8	10	12
$h(x)$	1	1	-7	-23	-47	-79



In which interval of the domain does the vertex occur?

Is the vertex a maximum or minimum?

$[2, 4]$; maximum

In which interval of the domain does the function increase?

none

In which interval of the domain does the function decrease?

$[4, 12]$

In which interval(s) of the domain would there be a zero?

$[4, 6]$

Objective: Determine key features of quadratic functions using a table of values.

Closure

When does the graph of a quadratic function not have zeros? Explain.

The function does not have zeros when the graph does not intercept the x -axis. Or, when all of its y values are positive, or all of its y values are negative.

