Calculus 1 Workbook

Functions

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MATH

VERTICAL LINE TEST

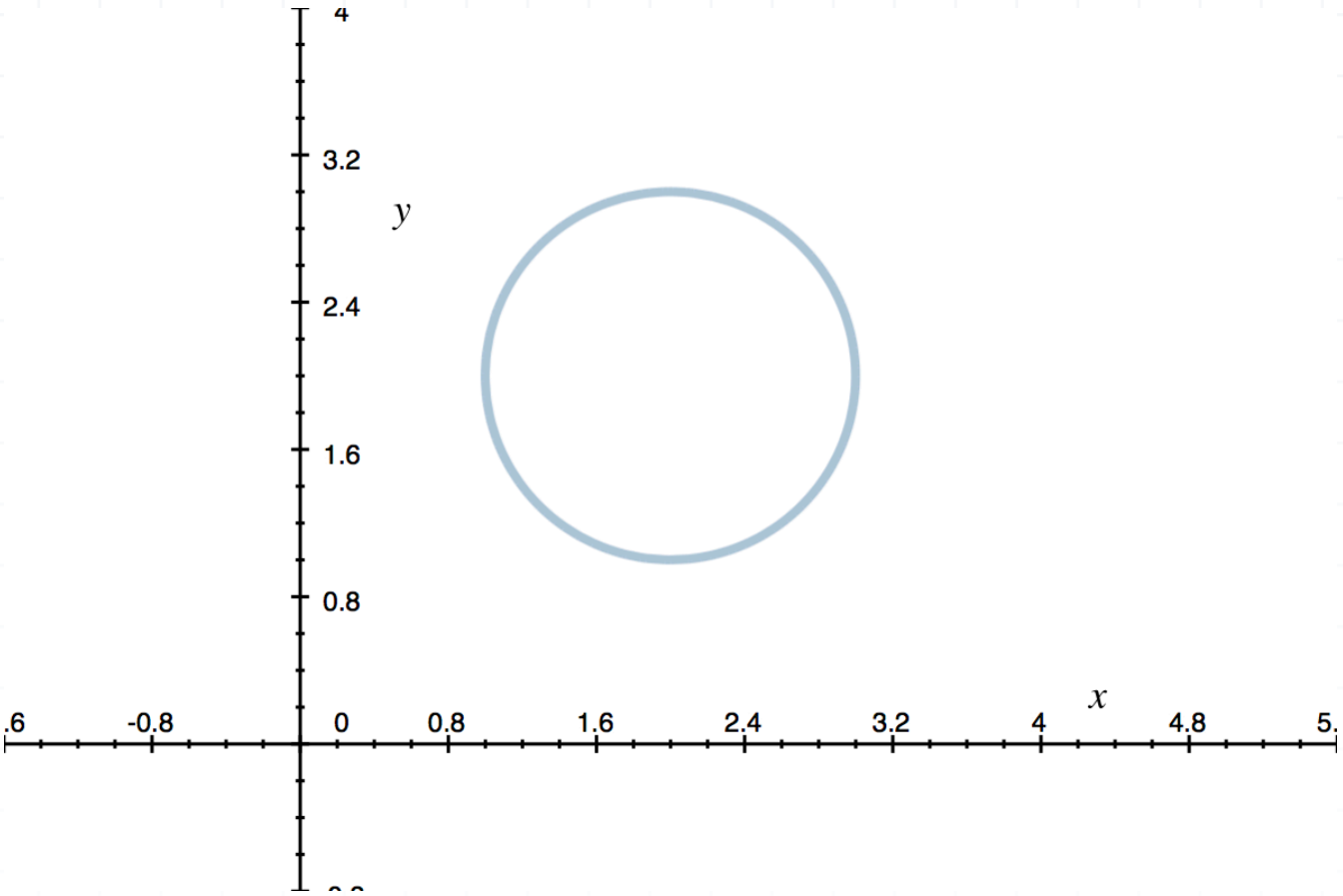
1. Determine algebraically whether or not the equation represents a function.

$$(x-1)^2+y=3$$

2. Fill in the blanks in the following statement using “equations,” and “functions.”

All _____ are _____.

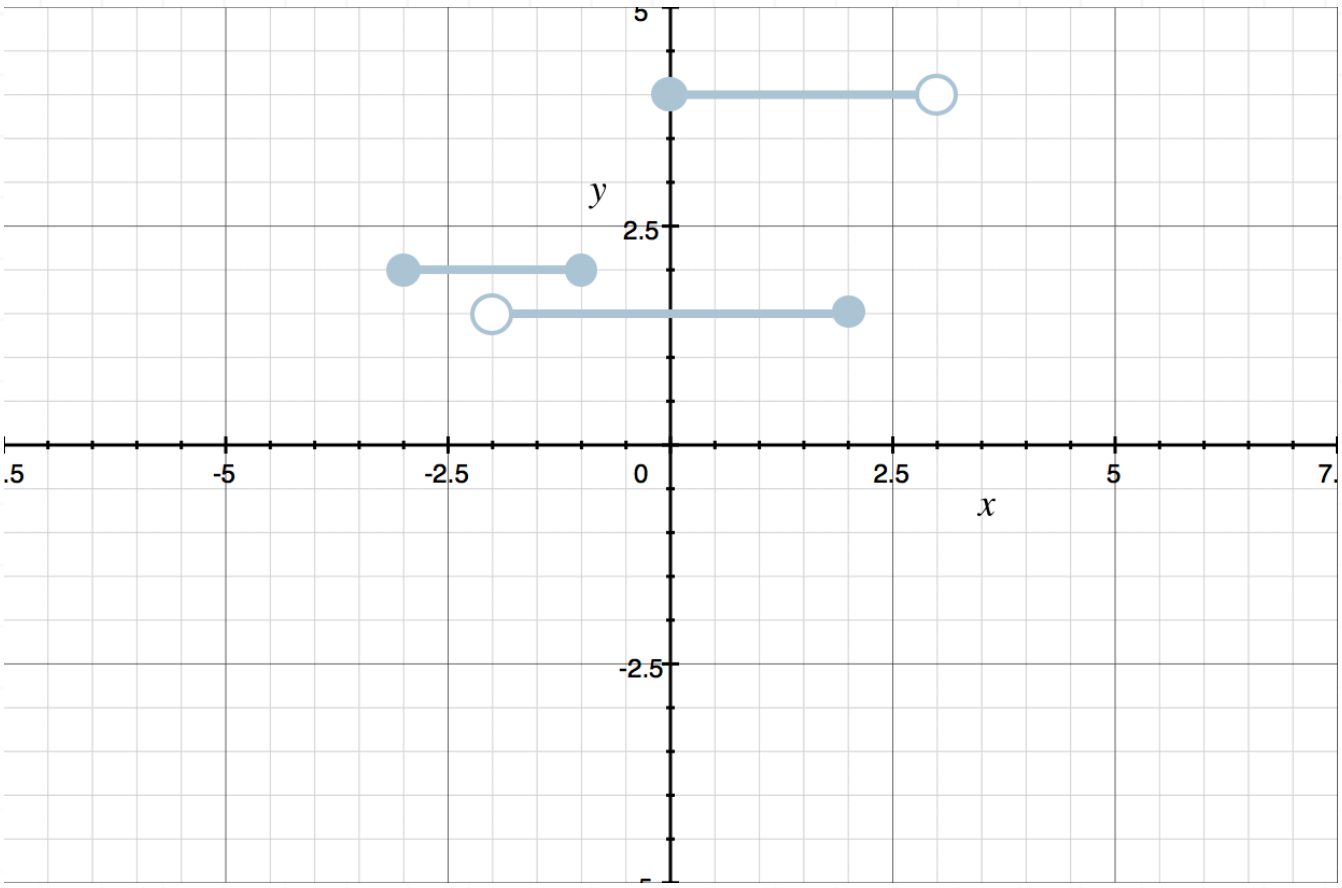
3. Use the Vertical Line Test to determine whether or not the graph is the graph of a function.



4. Determine algebraically whether or not the equation represents a function.

$$y^2 = x + 1$$

5. Use the Vertical Line Test to determine whether or not the graph represents a function.



6. Explain why the Vertical Line Test determines whether or not a graph represents a function.

7. Fill in the blanks in the following statement using: equations, functions.

Not all _____ are _____.

8. Determine algebraically whether or not the equation represents a function.

$$x^3 + y = 5$$

DOMAIN AND RANGE

1. Find the domain of $f(x)$.

$$f(x) = \frac{3}{x(x+1)} + x^2$$

2. Find the domain and range of the given set.

$$(-1,-3), \quad (0,5), \quad (-3,6), \quad (0,-3)$$

3. Find the domain and range of $g(x)$.

$$g(x) = \frac{\sqrt{x-2}}{3}$$

4. Find the domain and range of the function.

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

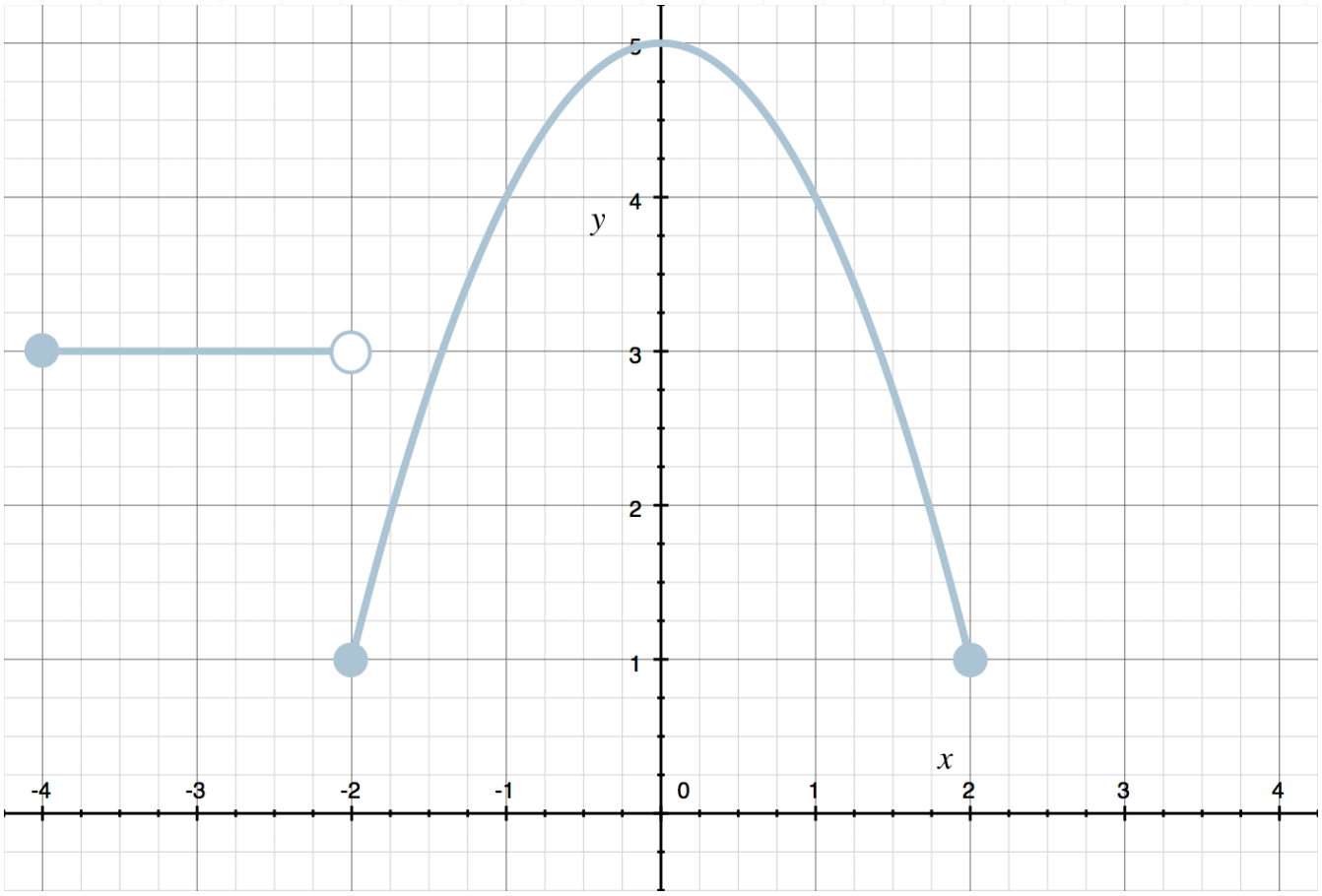
5. Give an example of a function that has a domain of $[1,\infty)$.

6. Find the domain and range of $f(x)$.

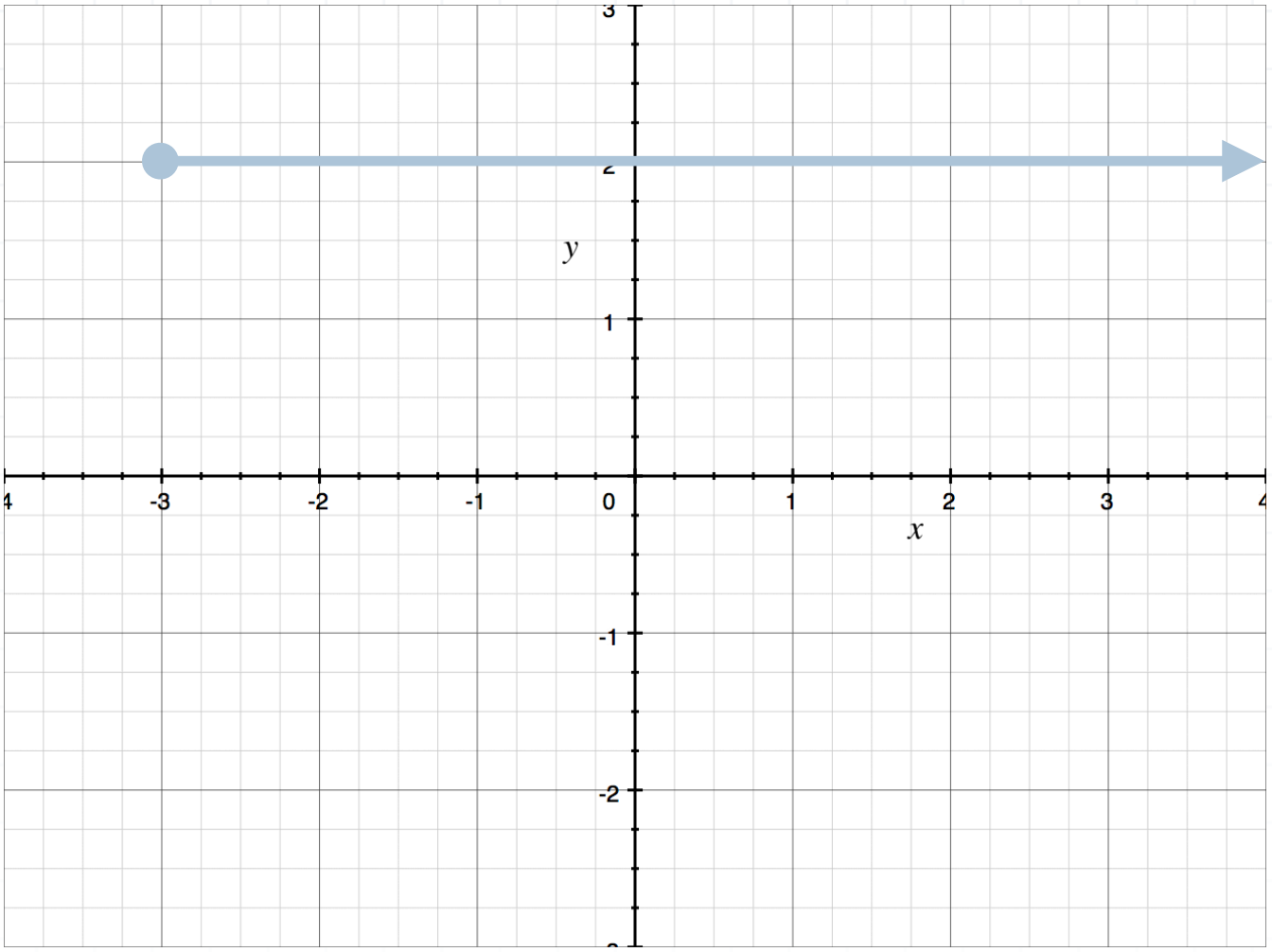
$$f(x) = \ln(x + 3) + 5$$

DOMAIN AND RANGE FROM A GRAPH

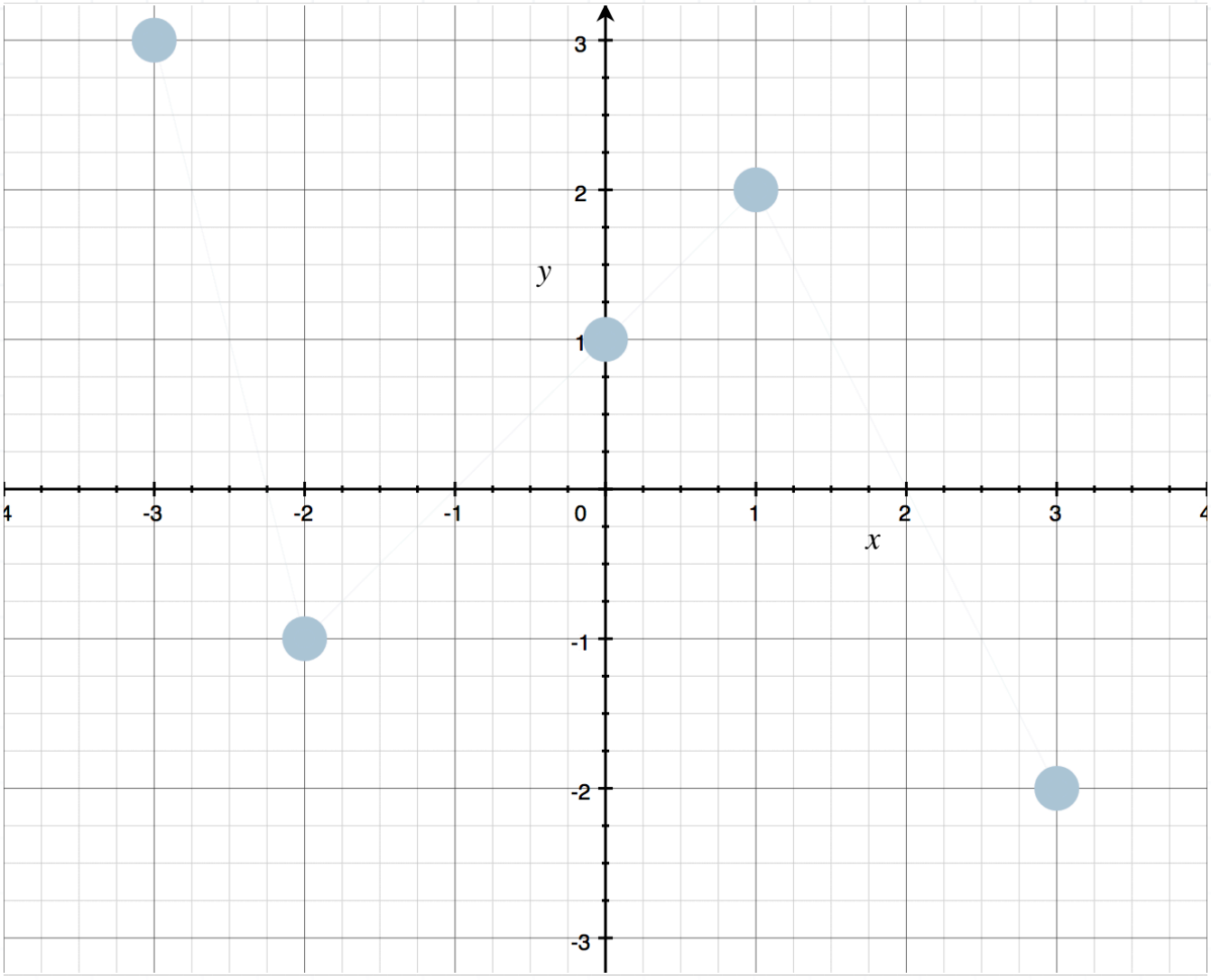
1. What is the domain and range of the function? Assume the graph does not extend beyond the graph shown.



2. What is the domain and range of the function?



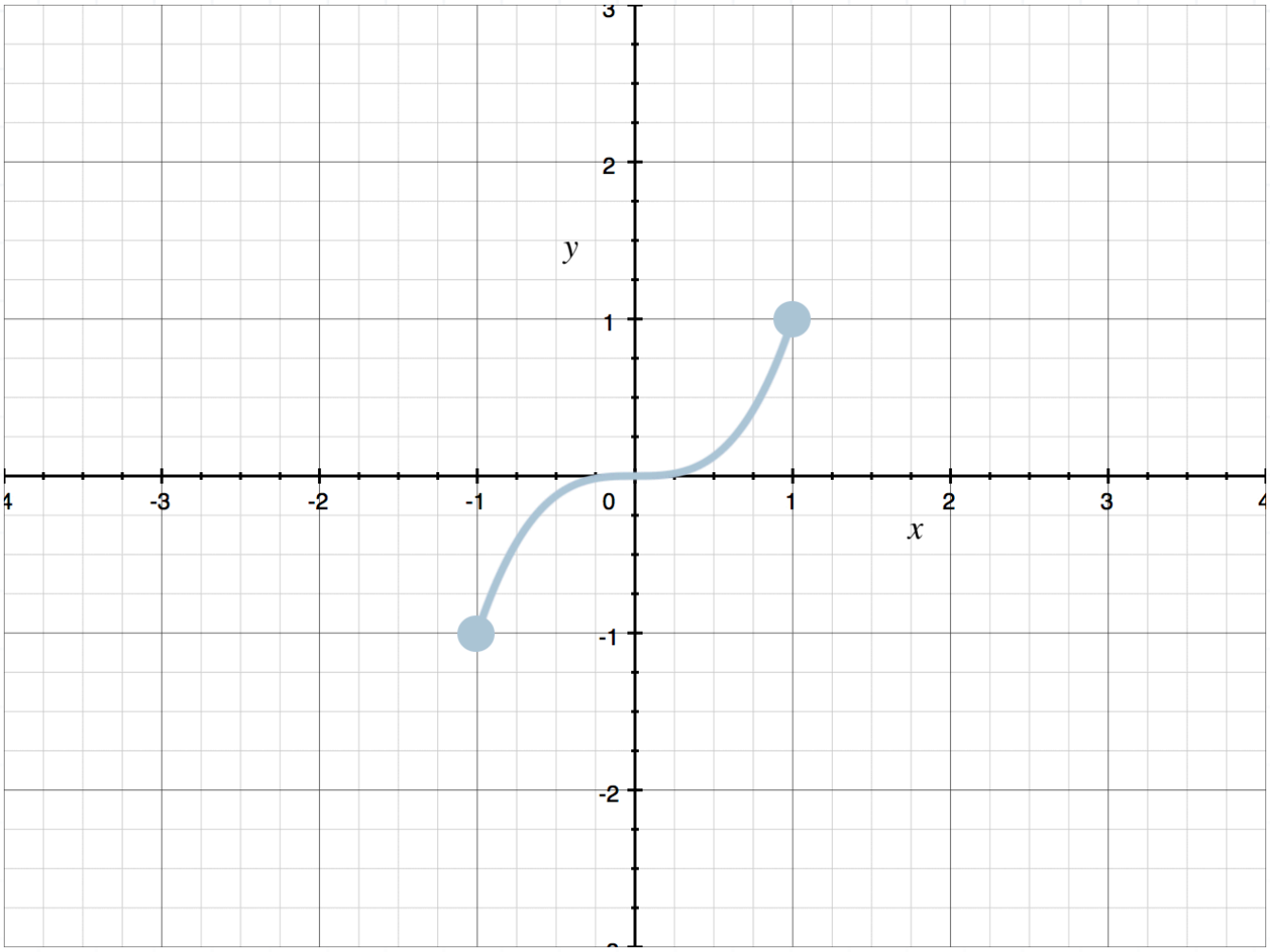
3. Determine the domain and range of the function.



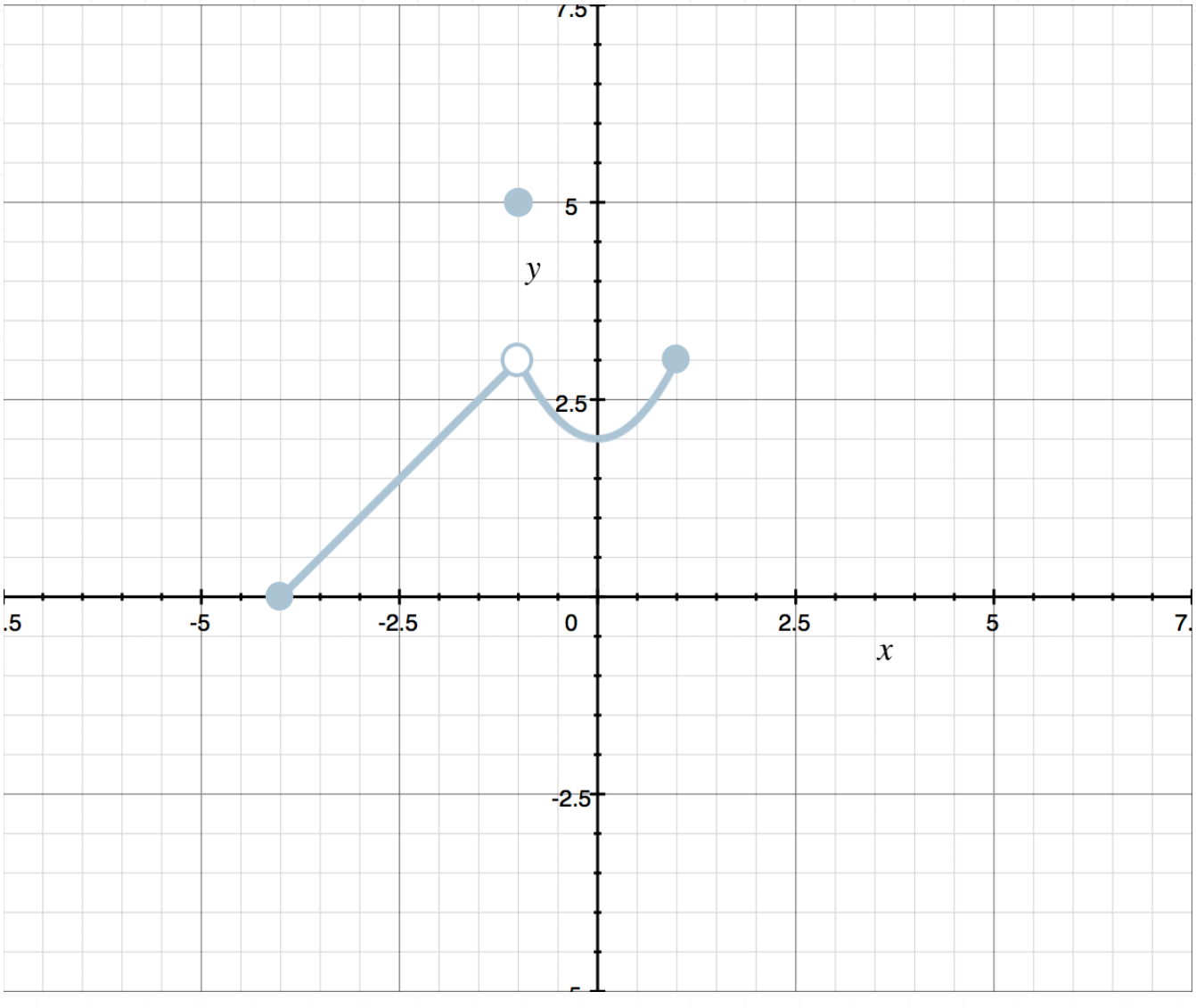
4. Fill in the blanks in the following description of the domain of a graph.

"The domain is all the values of the graph from _____ to _____."

5. What is the domain and range of the function? Assume the graph does not extend beyond the graph shown.



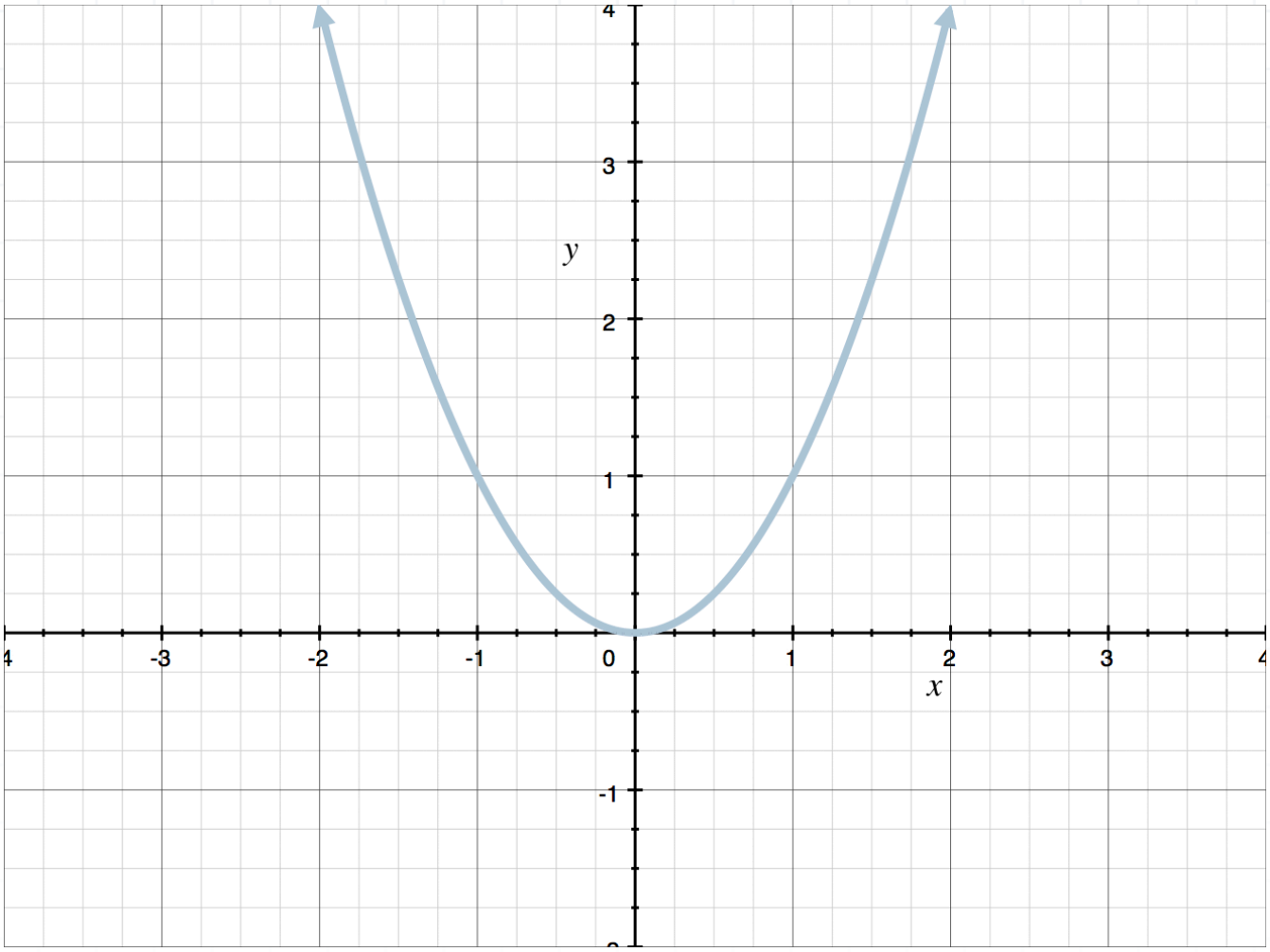
6. What is the domain and range of the function? Assume the graph does not extend beyond the graph shown.



7. Fill in the blanks in the following description of the range of a graph.

"The range is all the values of the graph from _____ to _____."

8. What is the domain and range of the function?



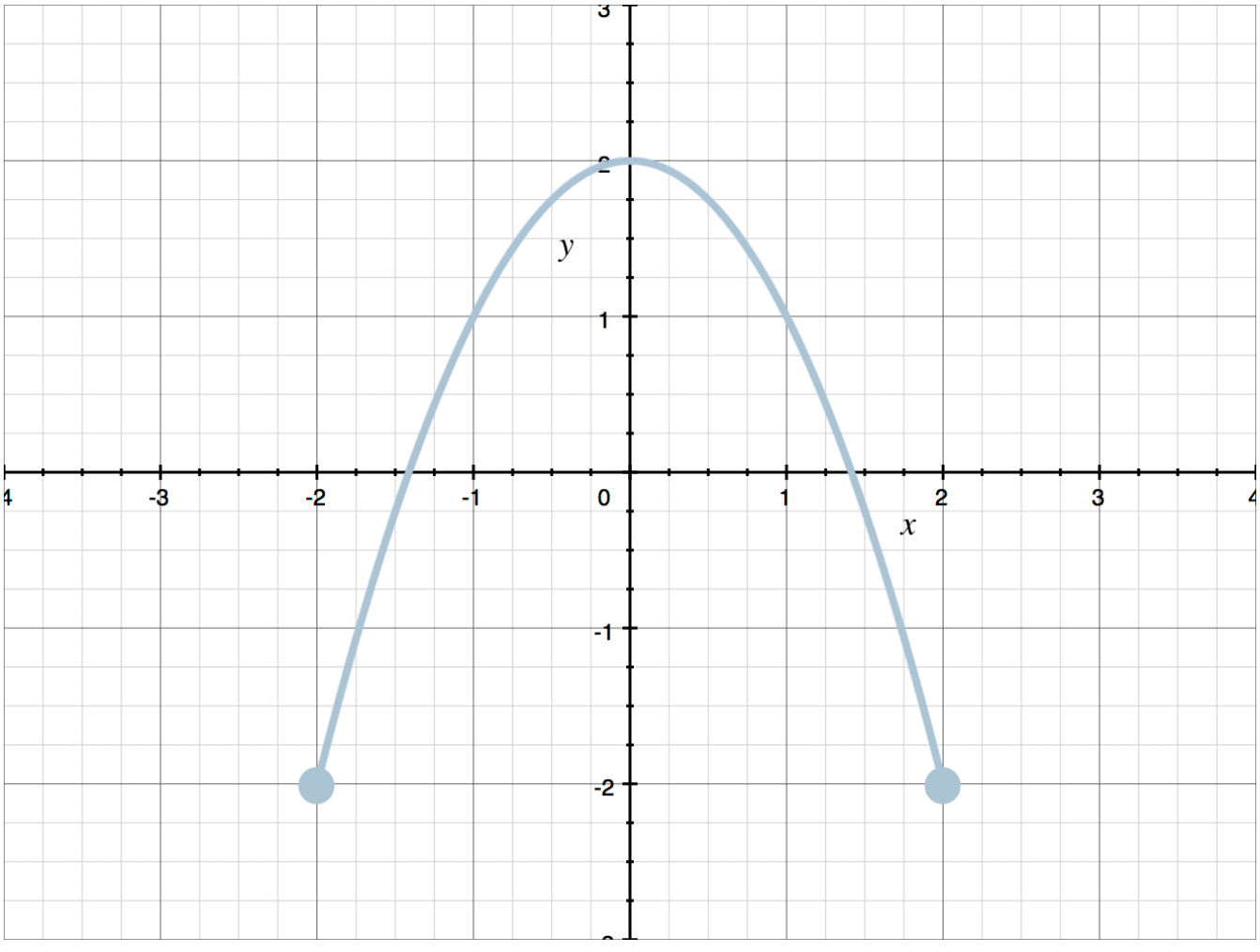
EVEN, ODD, OR NEITHER

1. Is the function even, odd, or neither?

$$f(x) = -x^5 + 2x^2 - 1$$

2. Describe the symmetry of an even function, and give an example of an even function.

3. Determine if the graph is the graph of a function that is even, odd, or neither.



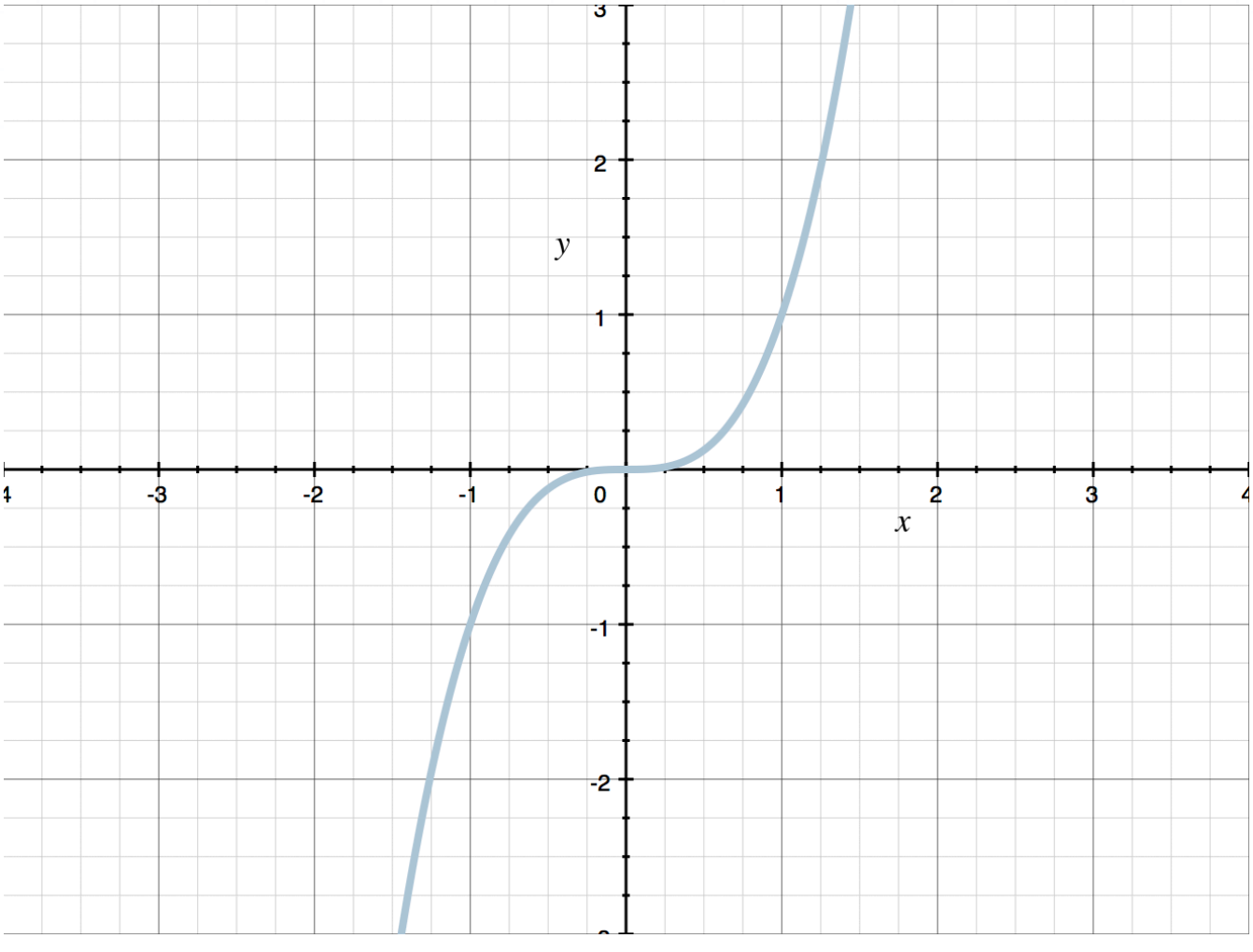
4. Is the function even, odd, or neither?

$$g(x) = -3x^2 + 5x^6$$

5. Show that the function is neither even nor odd.

$$f(x) = x^2 - 5x + 7$$

6. Determine if the graph is the graph of a function that is even, odd, or neither.



7. Is the function even, odd, or neither?

$$h(x) = x^3 - 3x$$

8. Describe the symmetry of an odd function, and give an example of an odd function.

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