



**WHAT'S
NEXT?**

CHAPTER

00

0

Functions

- 0.1 Functions and Their Graphs
- 0.2 Some Important Functions
- 0.3 The Algebra of Functions
- 0.4 Zeros of Functions—
The Quadratic Formula and Factoring
- 0.5 Exponents and Power Functions



Brief Calculus and Its Applications

FIFTH EDITION

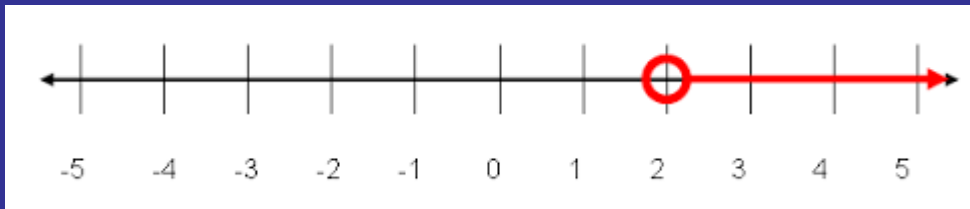
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- everything you've done this year
- everything you learned in math so far

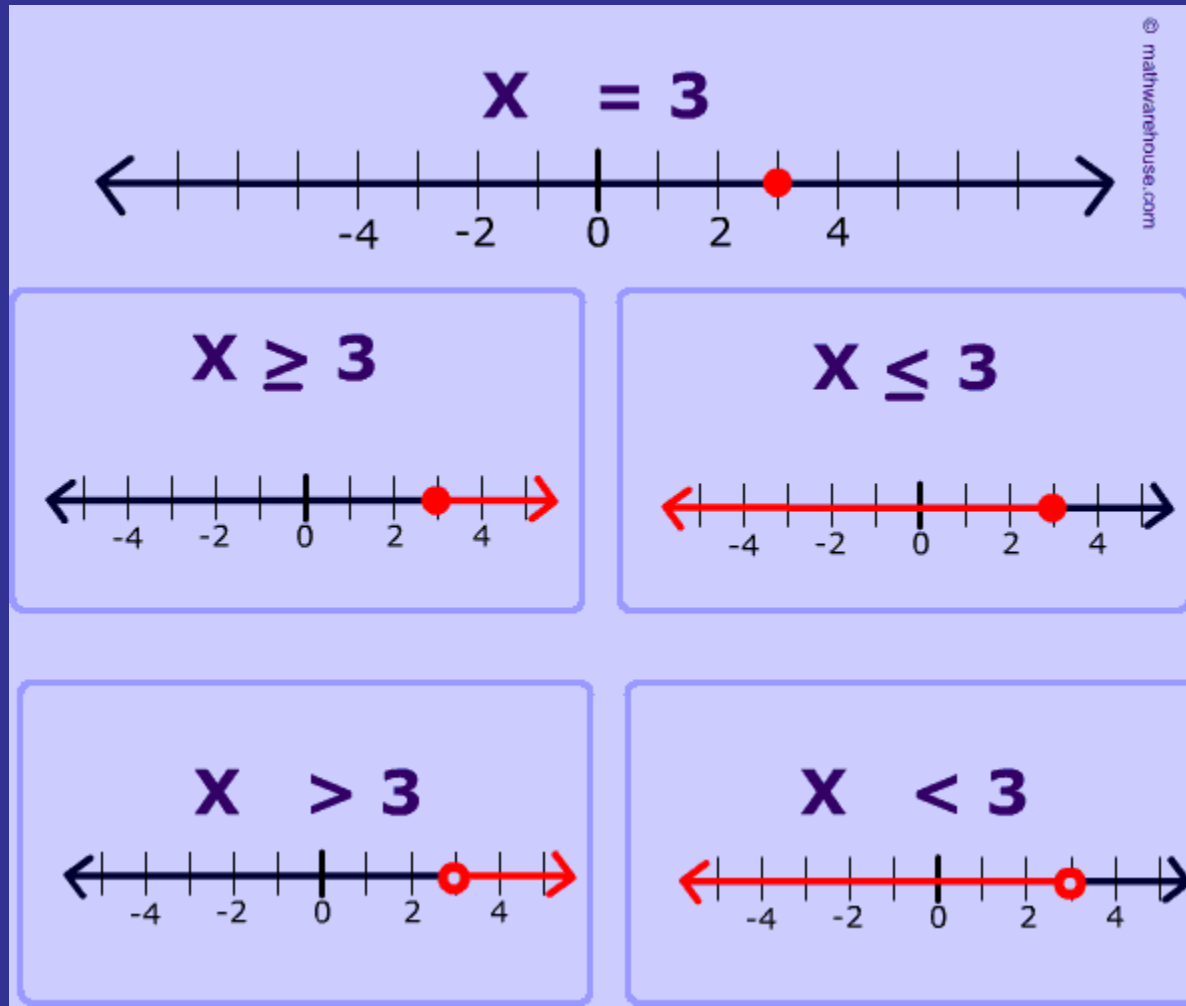


ACT[®]



Graphing and Interval Notation

You should remember:



You should also remember:

$$6 < x < 8$$



$$-4 \leq x < 5$$



$$-2 \leq x < 2$$



$$0 \leq x \leq 10$$



$$9 < x \leq 11$$



$$\frac{1}{4} \leq x \leq \frac{1}{2}$$



Interval Notation is just another way to write inequalities.

→ Uses () and [] instead of $<$ and $<$

→ $(3 , 7]$ means $3 < x \leq 7$

Parentheses mean you don't include the endpoints.

$$(-2, 4)$$



Square brackets mean you do include the endpoints.

$$[-3, 1]$$



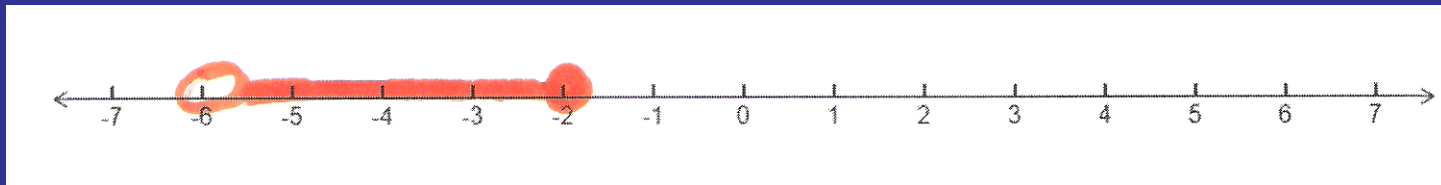
Graph these intervals:

$(-6 , -2]$

$(2 , \infty)$

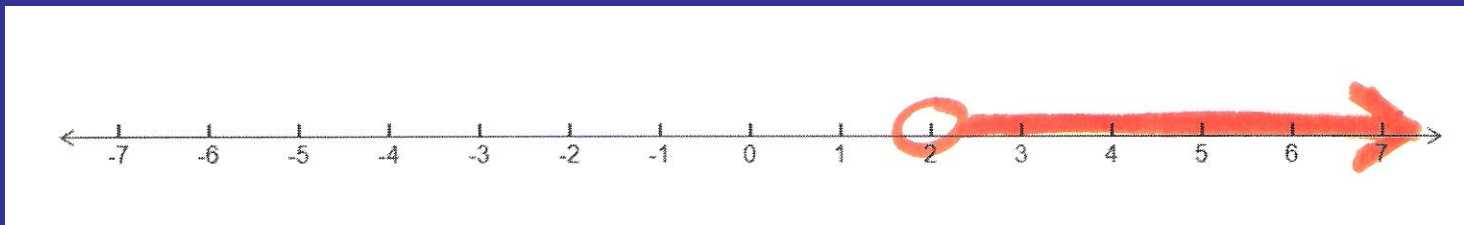
Graph these intervals:

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Graph these intervals:

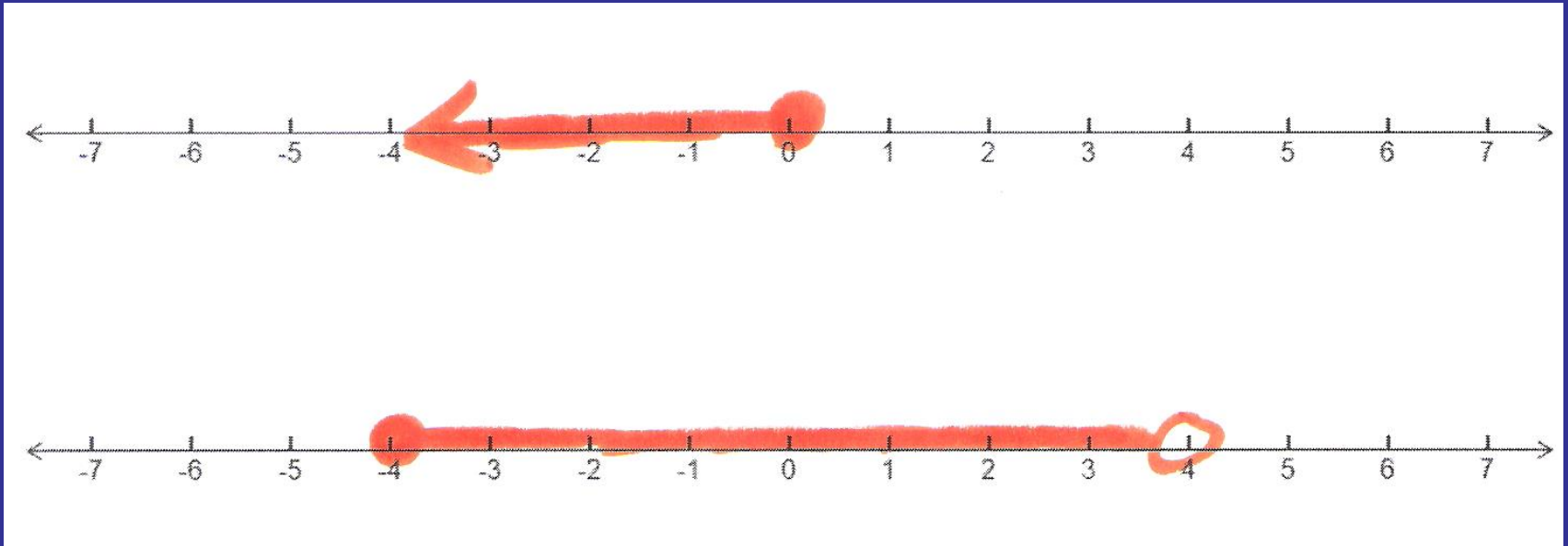
$(2 , \infty)$



Write the intervals that are graphed below:



$$(-\infty, 0]$$

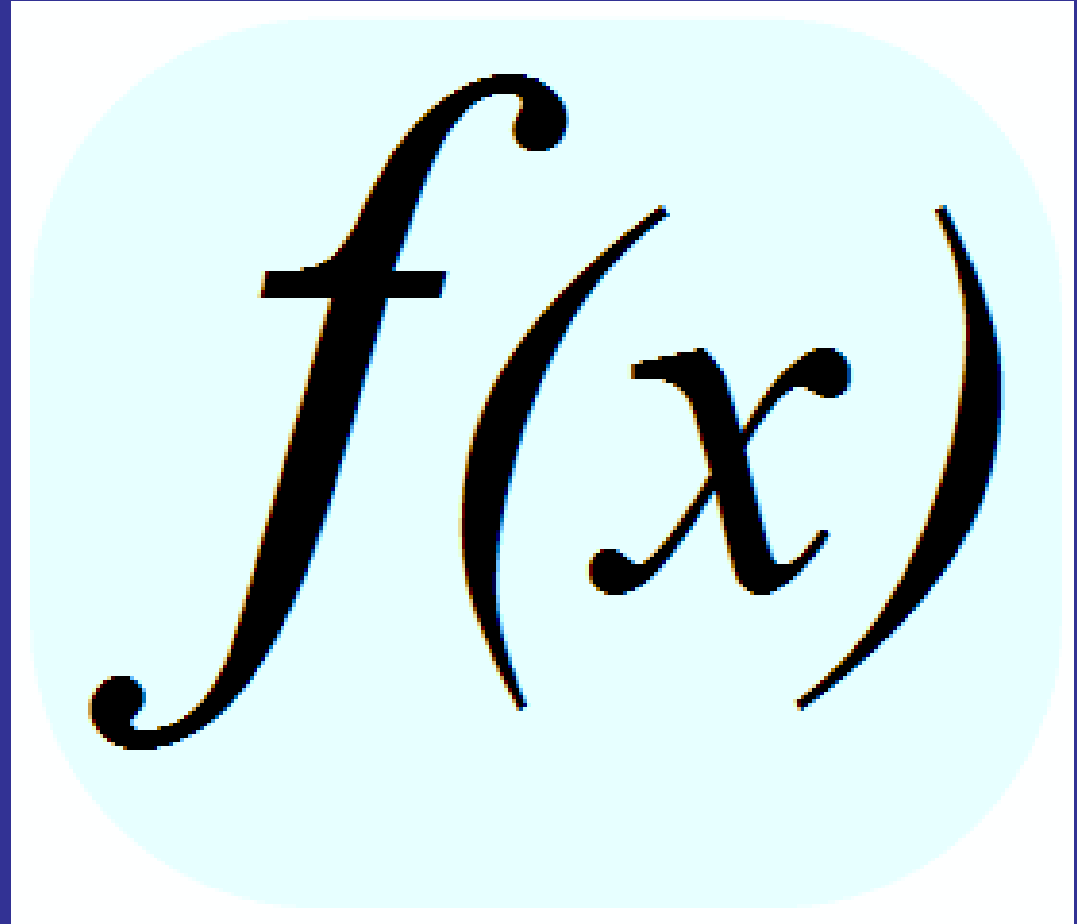


$$[-4, 4)$$

In Europe they use interval notation on the graphs themselves:

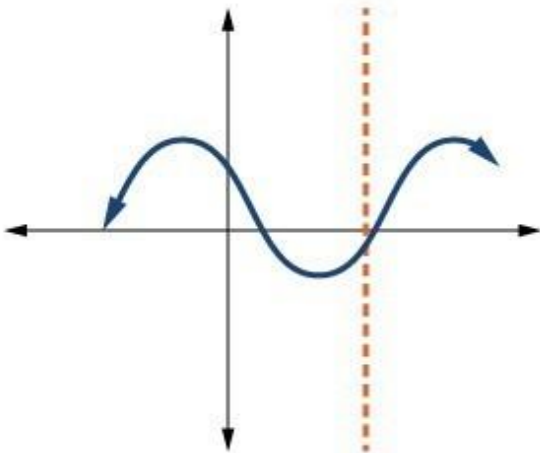


Functions

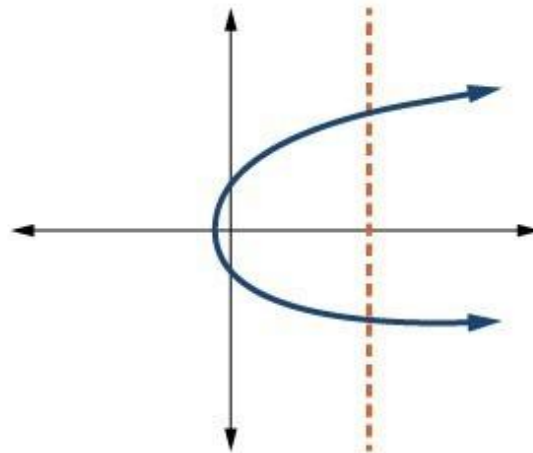


Is a graph a function?

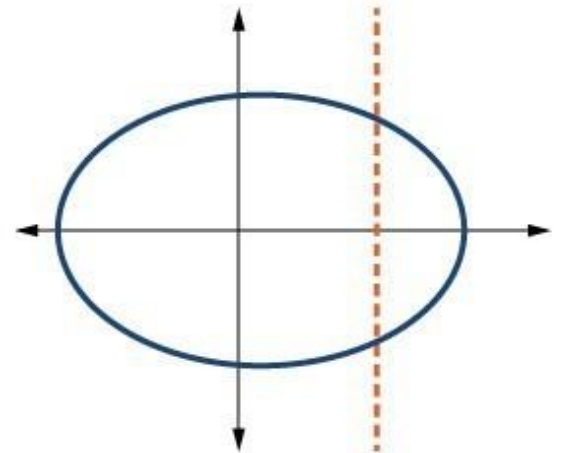
Function



Not a Function



Not a Function



If $f(x) = 3x^2 - 2x$,
find these values:

$$\rightarrow f(1)$$

$$\rightarrow f(3)$$

$$\rightarrow f(-2)$$

If $f(x) = 3x^2 - 2x$,
find these values:

→ $f(1)$

```
3*12-2*1  
1
```

→ $f(3)$

```
3*32-2*3  
21
```

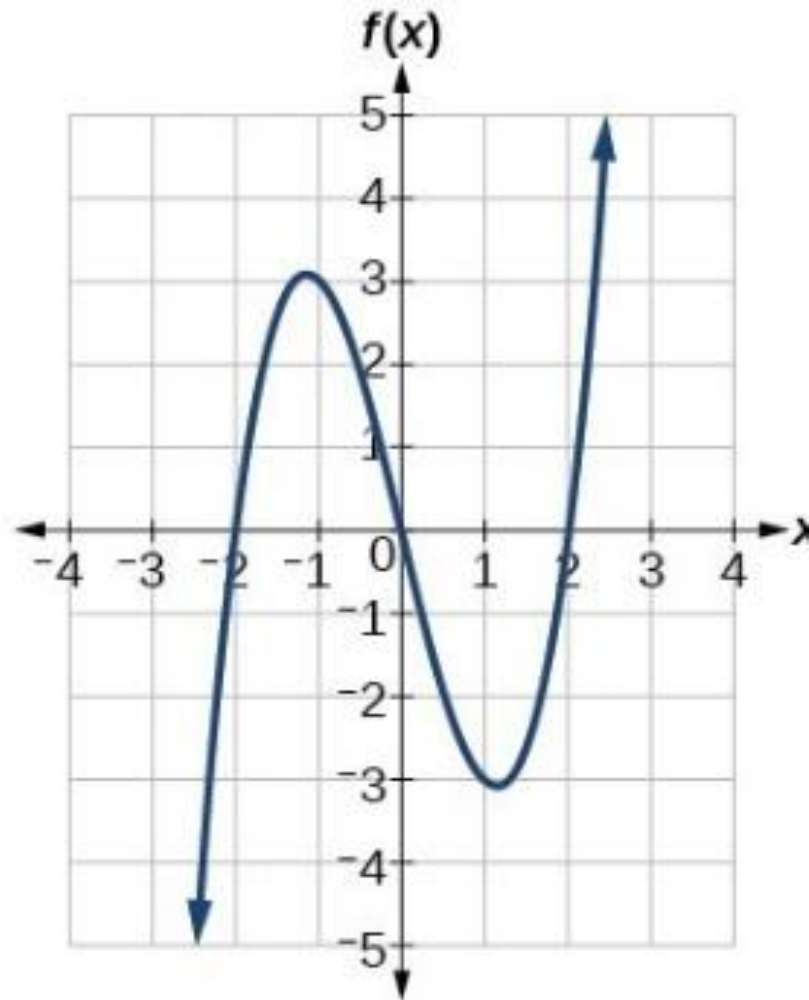
→ $f(-2)$

```
3*(-2)2-2*-2  
16
```

Find

→ $f(1)$

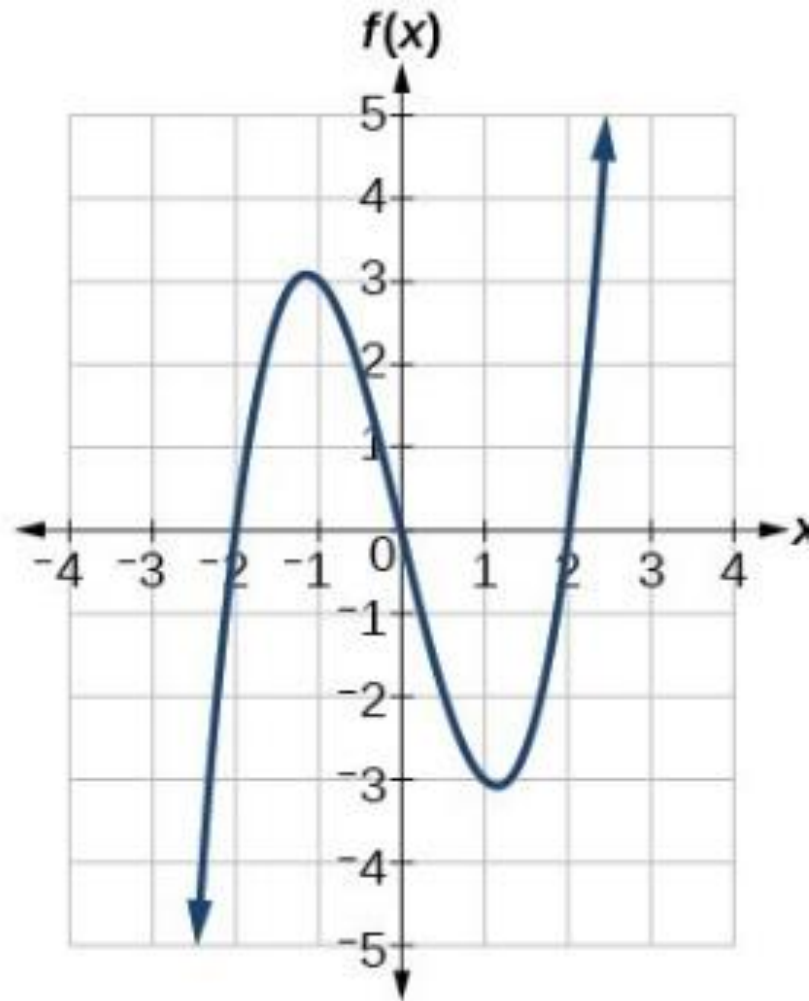
→ $f(-2)$



Find

$$\rightarrow f(1) = -3$$

$$\rightarrow f(-2) = 0$$



Find the domain of these functions:

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

$$\rightarrow g(x) = \sqrt{x+5}$$

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

$$x \neq 2$$

So ... $(-\infty, 2)$ and $(2, \infty)$

$$\rightarrow g(x) = \sqrt{x + 5}$$

$$x + 5 \geq 0$$

$$x \geq -5$$

So ... (-5 , ∞)

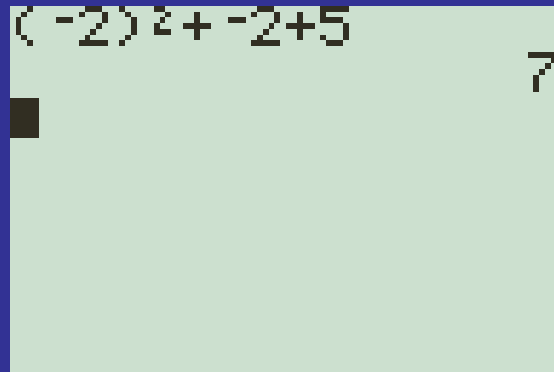
Is the point $(3,5)$ on the graph of the function $f(x) = 4x - 7$?

Is the point $(-2,3)$ on the graph of $g(x) = x^2 + x + 5$?

Is the point $(3,5)$ on the graph of the function $f(x) = 4x - 7$?



$4*3-7$
 5



$(-2)^2 + (-2) + 5$
7

Is the point $(-2, 3)$ on the graph of $g(x) = x^2 + x + 5$?

