

## Sect 4.7 Graphing Linear functions

Recall that a function is a pairing of inputs and outputs one to one.

We have seen linear functions in slope intercept form written as

$$y = mx + b$$

We can also write it using function notation.

$$f(x) = mx + b$$

$f(x)$  is the same as  $y$ . It is read as "f of x" and means the value of  $f$  at  $x$ .

To find the value of a function, substitute the given value for  $x$  and simplify.

Ex. Find the value of the function

$$f(x) = 3x - 15 \text{ when } x = -3$$

$$f(-3) = 3(-3) - 15$$

$$= -9 - 15$$

$$= -24$$

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Ex 2

For the function  $f(x) = -2x + 4$ , find the value of  $x$  so that  $f(x) = 16$

$$f(x) = -2x + 4$$

$$16 = -2x + 4$$

$$\begin{array}{r} 16 = -2x + 4 \\ -4 \quad \quad -4 \end{array}$$

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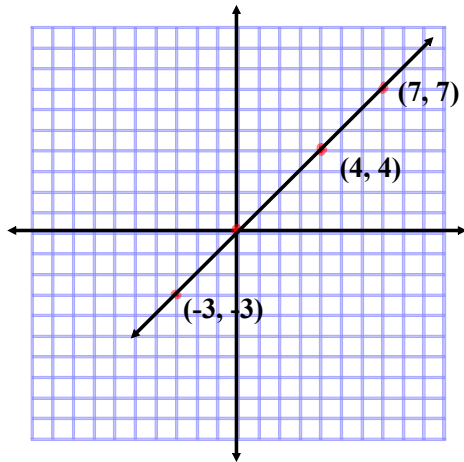
$$\begin{array}{r} 12 = -2x \\ \underline{-2} \quad \underline{-2} \end{array}$$

$$-6 = x$$

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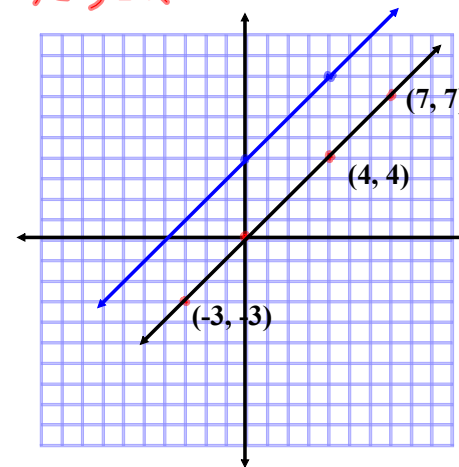
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Parent function - the most basic linear function  
 $f(x) = x$  its graph



By changing the slope or y-intercept we can create graphs that relate to  $f(x) = x$

Ex.  $f(x) = x + 4$   
same slope  
different y intercept is parallel

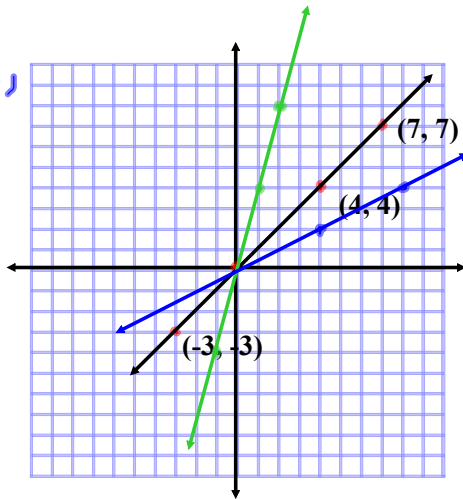


$$f(x) = 4x$$

Bigger slope, steeper graph

smaller slope,  
graph is less  
steep

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



$f(x) = -x$  Negative slope slants downward  
from left to right

