

April 9, 2018

Sect. 8-3

Solving Quad. Eqns. by  
Completing the Square  
Sq. Root Property  
Find x-ints

Remember :

$$x^2 - x - 6 = 0$$

$$(x+2)(x-3) = 0$$

$$x+2=0 \quad x-3=0$$

$$x=-2 \quad x=3$$

$$\begin{array}{r|l} -6 & \\ \hline 1 & -6 \\ -1 & 6 \\ 2 & -3 \\ -2 & 3 \end{array}$$

But  $x^2 - 2x - 5 = 0$

Now what?

We use completing  
the  
square

$$\begin{array}{r|l} -5 & \\ \hline 1 & -5 \\ -1 & 5 \\ ? & \end{array}$$

$$x^2 - 2x - 5 = 0$$

$$x^2 - 2x = 5$$

$$x^2 - 2x + \underbrace{(1)^2} = 5 + \underline{1}$$

$$\underbrace{(x - 1 - 1)}^2 = 6$$

$$x - 2 = \pm\sqrt{6}$$

$$x = 2 \pm \sqrt{6}$$

MML  
 $2 + \sqrt{6}, 2 - \sqrt{6}$

$$x^2 + 4x + 2 = 0$$

$$x^2 + 4x = -2$$

$$x^2 + 4x + \frac{(2)^2}{2} = -2 + \underline{+4}$$

$$(x + 2)^2 = 2$$

$$x + 2 = \pm\sqrt{2}$$

$$x = -2 \pm \sqrt{2}$$

$$x^2 + 6x = -3$$

$$x^2 + 6x + \underbrace{(3)^2} = -3 \underbrace{+ 9}$$

$$(x + 3)^2 = 6$$

$$x + 3 = \pm\sqrt{6}$$

$$x = -3 \pm\sqrt{6}$$

# Square Root Method

$$x^2 = 9$$

$$\sqrt{x^2} = \pm \sqrt{9}$$

$$x = \pm 3$$

$$\begin{aligned}x^2 - 16 &= 0 \\x^2 &= 16 \\ \sqrt{x^2} &= \pm \sqrt{16} \\x &= \pm 4\end{aligned}$$

$$\begin{aligned}x^2 - 7 &= 0 \\x^2 &= 7 \\x &= \pm \sqrt{7}\end{aligned}$$



$$x^2 = -25$$
$$\sqrt{x^2} = \pm \sqrt{-25}$$
$$x = \pm 5i$$

$$x^2 = -11$$
$$x = \pm \sqrt{-11}$$
$$x = \pm i\sqrt{11}$$

Find x-ints.

$$x^2 - x - 6 = 0$$

$$(x - 3)(x + 2) = 0$$

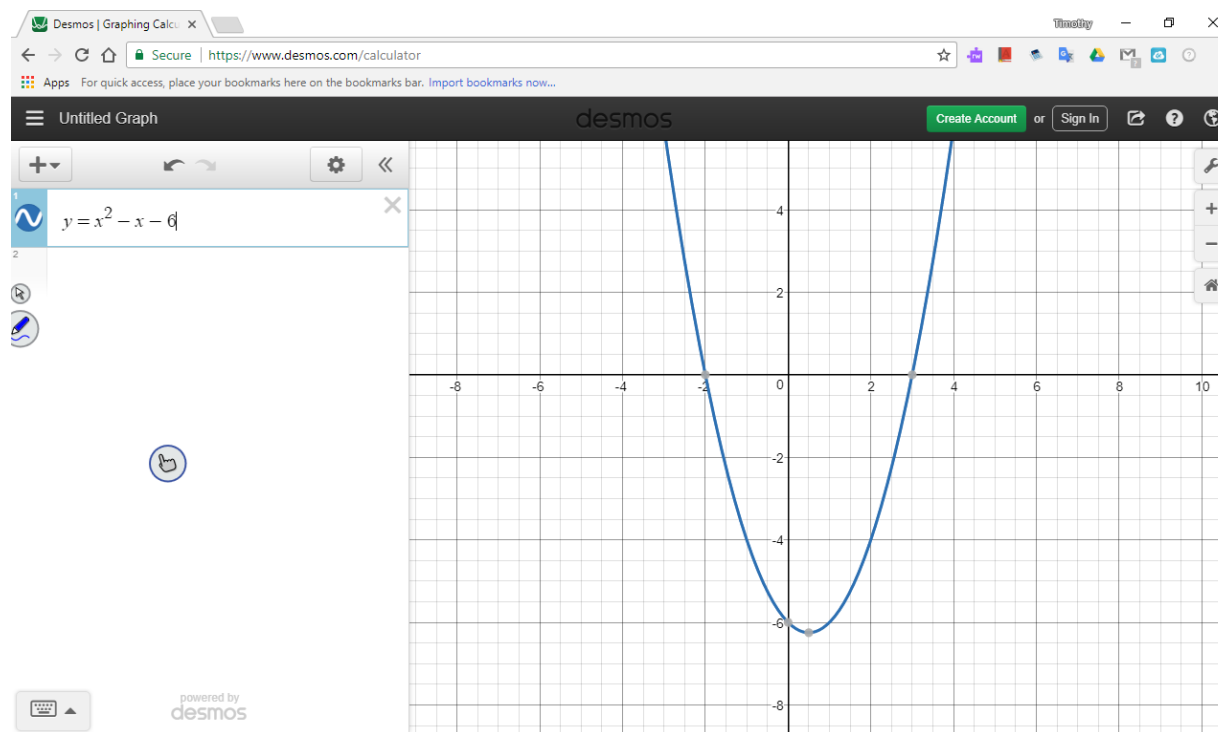
$$x - 3 = 0$$

$$x = 3$$

$$x + 2 = 0$$

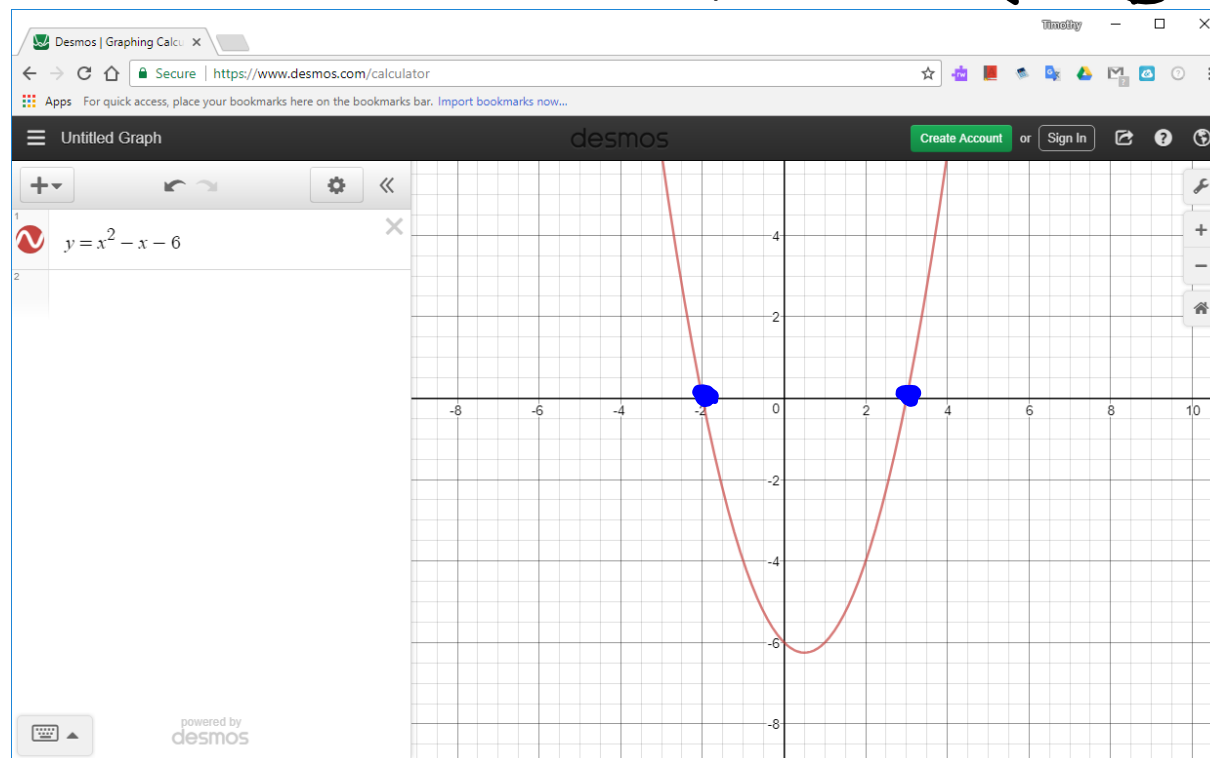
$$x = -2$$

Graph  $f(x) = x^2 - x - 6$



Find the x-ints of  $f(x) = x^2 - x - 6$

$(-2, 0)$   
 $(3, 0)$



Find the x-ints of  $f(x) = x^2 - x - 6$

$$x^2 - x - 6 = 0$$

$$(x - 3)(x + 2) = 0$$

$$x - 3 = 0 \quad x + 2 = 0$$

$$x = 3 \quad x = -2$$

$$f(x) = x^2 - 3x + 4$$

No x-ints

