

# C11 - 4.2 - $x - int$ /Standard Form Notes

$$x \text{ int} = (2,0), (6,0)$$

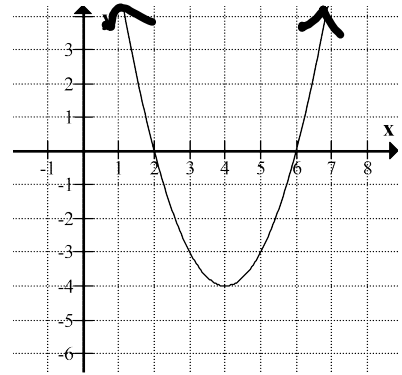
$$\begin{array}{l} x = 2 \\ -2 \quad -2 \\ x - 2 = 0 \end{array} \qquad \begin{array}{l} x = 6 \\ -6 \quad -6 \\ x - 6 = 0 \end{array}$$

$$\begin{array}{l} \swarrow \qquad \searrow \\ y = (x - 2)(x - 6) \\ y = x^2 - 8x + 12 \end{array}$$

Write down the x values.

Add or subtract to both sides to make = 0

Factored Form  
Standard Form



$$x \text{ int} = \left(\frac{1}{2}, 0\right), (4, 0)$$

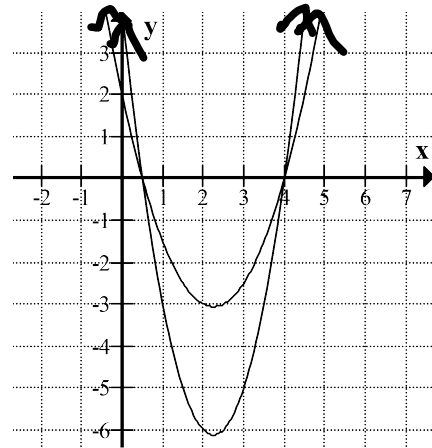
$$\begin{array}{l} x = \frac{1}{2} \\ 2 \times x = \frac{1}{2} \times 2 \\ 2x = 1 \\ -1 \quad -1 \\ 2x - 1 = 0 \end{array} \qquad \begin{array}{l} x = 4 \\ -4 \quad -4 \\ x - 4 = 0 \end{array}$$

$$\begin{array}{l} \swarrow \qquad \searrow \\ y = (2x - 1)(x - 4) \\ y = 2x^2 - 9x + 4 \end{array}$$

Multiply and Add or subtract to both sides to make = 0

$$y = x^2 - \frac{9}{2}x + 2$$

$$0 = x^2 - \frac{9}{2}x + 2$$



$$x \text{ int} = \left(\frac{1}{2}, 0\right), (4, 0)$$

$$\begin{array}{l} x = \frac{1}{2} \\ -\frac{1}{2} \quad -\frac{1}{2} \\ x - \frac{1}{2} = 0 \end{array} \qquad \begin{array}{l} x = 4 \\ -4 \quad -4 \\ x - 4 = 0 \end{array}$$

$$\begin{array}{l} y = \left(x - \frac{1}{2}\right)(x - 4) \\ y = x^2 - 4x - \frac{1}{2}x + 2 \\ y = x^2 - \frac{9}{2}x + 2 \end{array}$$

$$y = 2x^2 - 9x + 4$$

$$0 = 2x^2 - 9x + 4$$

Notice: two different graphs in standard form can have the same x-intercepts.

# C11 - 4.2 - Find Standard Form x-int "a" and a Point Notes

Find equation in Standard Form using  $x$  - intercepts and "a"

$$y = a(x + \#)(x + \#)$$

$x$  - int = 2 and 6  
 $a = 1$

$$\begin{array}{l} x = 2 \\ -2 \quad -2 \\ x - 2 = 0 \end{array} \qquad \begin{array}{l} x = 6 \\ -6 \quad -6 \\ x - 6 = 0 \end{array}$$

Set  $x$  - int = # and make equal to zero

$$\begin{aligned} y &= a(x + \#)(x + \#) \\ y &= 1(x - 2)(x - 6) \\ y &= (x - 2)(x - 6) \\ y &= x^2 - 8x + 12 \end{aligned}$$

Write Factored Form  
 Substitute Factors

Foil

$x$  - int = 2 and -2  
 $a = 2$

$$\begin{array}{l} x = 2 \\ -2 \quad -2 \\ x - 2 = 0 \end{array} \qquad \begin{array}{l} x = -2 \\ +2 \quad +2 \\ x + 2 = 0 \end{array}$$

$$\begin{aligned} y &= a(x + \#)(x + \#) \\ y &= 2(x - 2)(x + 2) \\ y &= 2(x^2 + 2x - 2x - 4) \\ y &= 2(x^2 - 4) \\ y &= 2x^2 - 8 \end{aligned}$$

$x$  - int =  $\frac{3}{2}$  and  $-\frac{7}{2}$

$$\begin{array}{l} x = \frac{3}{2} \\ 2 \times x = \frac{3}{2} \times 2 \\ 2x = 3 \\ -3 \quad -3 \\ 2x - 3 = 0 \end{array} \qquad \begin{array}{l} x = -\frac{7}{2} \\ 2 \times x = \frac{3}{2} \times 2 \\ 2x = -7 \\ +7 \quad +7 \\ 2x + 7 = 0 \end{array}$$

$$\begin{aligned} y &= a(x + \#)(x + \#) \\ y &= (2x - 3)(2x + 7) \\ y &= 4x^2 + 14x - 6x - 21 \\ y &= 4x^2 + 8x - 21 \end{aligned}$$

$x$  - int = -1 and 3  
 (2, -6)

$$\begin{aligned} y &= a(x + 1)(x - 3) \\ -6 &= a(2 + 1)(2 - 3) \\ -6 &= a(3)(-1) \\ -6 &= -3a \\ a &= 2 \end{aligned}$$

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