

Factor and solve.

1.  $x^2 + 7x - 170 = 0$

$(x-10)(x+17) = 0$

$x = 10 \quad x = -17$

$c = -170$	$b = 7$
$-10 \cdot 17$	$7$

2.  $x^2 + 15x - 16 = 0$

$(x-1)(x+16) = 0$

$x = 1 \quad x = -16$

$c = -16$	$b = 15$
$-1 \cdot 16$	$15$

3.  $x^2 + 12x + 35 = 0$

$(x+5)(x+7) = 0$

$x = -5 \quad x = -7$

$c = 35$	$b = 12$
$1 \cdot 35$	$36$
$5 \cdot 7$	$12$

4.  $x^2 - 11x - 80 = 0$

$(x+5)(x-16) = 0$

$x = -5 \quad x = 16$

$c = -80$	$b = -11$
$1 \cdot -80$	$-79$
$2 \cdot -40$	$-28$
$4 \cdot -20$	$-16$
$5 \cdot -16$	$-11$

Solve using completing the square.

5.  $x^2 - 8x + 12 = 0$

$x^2 - 8x + \frac{16}{1} + 12 - \frac{16}{1} = 0$

$(x-4)^2 - 4 = 0$   
+4 +4

$\sqrt{(x-4)^2} = \pm\sqrt{4}$

$x-4 = \pm 2$   
+4 +4

$x = 4 \pm 2$   
 $\nearrow = 4+2 = (6)$   
 $\searrow = 4-2 = (2)$

6.  $x^2 - 10x + 11 = 0$

$x^2 - 10x + \frac{25}{1} + 11 - \frac{25}{1} = 0$

$(x-5)^2 - 14 = 0$   
+14 +14

$\sqrt{(x-5)^2} = \pm\sqrt{14}$

$x-5 = \pm\sqrt{14}$   
+5 +5

$x = 5 \pm \sqrt{14}$

Solve using the quadratic formula.

7.  $x^2 + 5x + 6 = 0$

$a=1$   
 $b=5$   
 $c=6$   

$$x = \frac{-(5) \pm \sqrt{(5)^2 - 4(1)(6)}}{2(1)}$$

$$x = \frac{-5 \pm \sqrt{1}}{2} = \frac{-5 \pm 1}{2}$$
  

$$\begin{aligned} \nearrow \frac{-5+1}{2} &= \frac{-4}{2} = (-2) \\ \searrow \frac{-5-1}{2} &= \frac{-6}{2} = (-3) \end{aligned}$$

8.  $2x^2 + 11x + 6 = 0$

$a=2$   
 $b=11$   
 $c=6$   

$$x = \frac{-(11) \pm \sqrt{(11)^2 - 4(2)(6)}}{2(2)}$$

$$x = \frac{-11 \pm \sqrt{73}}{4}$$

9. Solve  $x^2 + 2x - 15 = 0$  using factoring, completing the square, and the quadratic formula. Graph  $y = x^2 + 2x - 15$  and find the vertex and x-intercepts.

Factor:

$$\begin{array}{c|c} c = -15 & b = 2 \\ \hline -3 & 5 \\ \hline & 2 \end{array}$$

$(x-3)(x+5) = 0$

$x = 3 \quad x = -5$

Complete the Square:

$$x^2 + 2x + \frac{1}{4} - 15 - \frac{1}{4} = 0$$

$$\begin{aligned} (x+1)^2 - 16 &= 0 \\ \sqrt{(x+1)^2} &= \pm\sqrt{16} \end{aligned}$$

$$\begin{aligned} x+1 &= \pm 4 \\ -1 \quad -1 & \nearrow = -1+4 = (3) \\ x &= -1 \pm 4 \searrow = -1-4 = (-5) \end{aligned}$$

Quadratic Formula:  $a=1$   
 $b=2$   
 $c=-15$   

$$x = \frac{-2 \pm \sqrt{(2)^2 - 4(1)(-15)}}{2(1)}$$

x-intercepts:

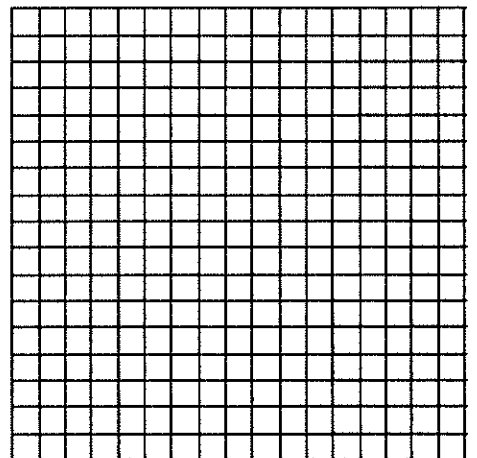
$(3, 0)$

$(-5, 0)$

$$x = \frac{-2 \pm \sqrt{64}}{2} = \frac{-2 \pm 8}{2}$$
  

$$\begin{aligned} \nearrow &= (3) \\ \searrow &= (-5) \end{aligned}$$

Graph:



vertex:  $(-1, -16)$

Which method do you prefer? Why? CTS because it also shows me the vertex. :)