58-59

Quadratic Formula:

$ax^2 + bx + c = 0$ $\quad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

1. $x^2 - 5x = 7$

$-7 \quad -7$

$x^2 - 5x - 7 = 0$

$a = 1$
$b = -5$
$c = -7$

$$x = \frac{5 \pm \sqrt{25 - 4(1)(-7)}}{2(1)} = \frac{5 \pm \sqrt{25+28}}{2}$$

$$= \frac{5 \pm \sqrt{53}}{2}$$

2. $x^2 - 6x + 10 = 0$ $\quad a = 1 \quad b = -6 \quad c = 10$

$$x = \frac{6 \pm \sqrt{36 - 4(1)(10)}}{2(1)} = \frac{6 \pm \sqrt{36-40}}{2}$$

$$= \frac{6 \pm \sqrt{-4}}{2} = \frac{6 \pm 2i}{2} = \frac{3 \pm i}{1} = 3 \pm i$$

3. $16x^2 - 23x = 17x - 25$

$a = 16$
$b = -40$
$c = 25$

$16x^2 - 40x + 25 = 0$

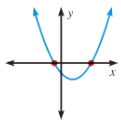
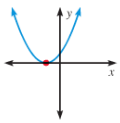
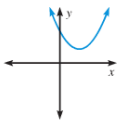
$$\frac{40 \pm \sqrt{1600 - 4(16)(25)}}{2(16)}$$

$$\frac{40 \pm \sqrt{1600 - 1600}}{32} = \frac{40 \pm 0}{32}$$

$$= \frac{40}{32} = \frac{5}{4}$$

KEY CONCEPT *For Your Notebook*

Using the Discriminant of $ax^2 + bx + c = 0$ $\quad b^2 - 4ac$

Value of discriminant	$b^2 - 4ac > 0$	$b^2 - 4ac = 0$	$b^2 - 4ac < 0$
Number and type of solutions	Two real solutions	One real solution	Two imaginary solutions
Graph of $y = ax^2 + bx + c$	 Two x-intercepts	 One x-intercept	 No x-intercept