Solving Quadratic Equations - Answers

Problems: Solve each of the following quadratic equations.

1. $x^2 - 3x + 2 = 0$

   $(x-2)(x-1) = 0$

   $x - 2 = 0, x = 2$

   $x - 1 = 0, x = 1$

2. $2x^2 + 5x = 20$

   $2x^2 + 5x - 20 = 0, a = 2, b = 5, c = -20$

   $x = \dfrac{-5 \pm \sqrt{(5)^2 - 4(2)(-20)}}{2(2)}, x = \dfrac{-5 \pm \sqrt{25 + 160}}{4}$

   $x = \dfrac{-5 \pm \sqrt{185}}{4}$

   $x = \dfrac{-5 + \sqrt{185}}{4}, x = \dfrac{-5 - \sqrt{185}}{4}$

3. $y^2 + 7y = 18$

   $y^2 + 7y - 18 = 0$

   $(y-2)(y+9) = 0$

   $y - 2 = 0, y = 2$

   $y + 9 = 0, y = -9$

4. $4y^2 - 52 = 5y$

   $4y^2 - 5y - 52 = 0, a = 4, b = -5, c = -52$

   $y = \dfrac{-(-5) \pm \sqrt{(-5)^2 - 4(4)(-52)}}{2(4)}, y = \dfrac{5 \pm \sqrt{25 + 832}}{8}$

   $y = \dfrac{5 \pm \sqrt{857}}{8}$

   $y = \dfrac{5 + \sqrt{857}}{8}, y = \dfrac{5 - \sqrt{857}}{8}$

5. $z^2 + 13 = 3z$

$z^2 - 3z + 13 = 0, a = 1, b = -3, c = 13$

$$z = \frac{-(-3) \pm \sqrt{(-3)^2 - 4(1)(13)}}{2(1)}, z = \frac{3 \pm \sqrt{9 - 52}}{2}$$

$$z = \frac{3 \pm \sqrt{-43}}{2}$$

No solution (can't square root a negative number)

6. $9 + y^2 = -6y$

$y^2 + 6y + 9 = 0$

$(y + 3)(y + 3) = 0$

$y + 3 = 0, y = 3$