Negative Completing the Square Worksheet

1. Solve for
$$x$$
: $x^2 - 6x + 5 = 0$

2. Solve for
$$x$$
: $x^2 + 8x + 7 = 0$

3. Solve for
$$x: -x^2 + 4x - 3 = 0$$

4. Solve for
$$x: -2x^2 + 12x - 14 = 0$$

5. Solve for
$$x$$
: $x^2 - 10x + 16 = 0$

6. Solve for
$$x: -x^2 - 2x + 8 = 0$$

7. Solve for
$$x: 2x^2 - 4x - 6 = 0$$

8. Solve for
$$x: -3x^2 + 18x - 27 = 0$$

Answer Key

1.
$$x^2 - 6x + 5 = 0$$

$$x^2 - 6x = -5$$

$$x^2 - 6x + 9 = 4$$

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

$$x - 3 = \pm 2$$

$$x = 5$$
 or $x = 1$

2.
$$x^2 + 8x + 7 = 0$$

$$x^2 + 8x = -7$$

$$x^2 + 8x + 16 = 9$$

$$(x+4)^2 = 9$$

$$x + 4 = \pm 3$$

$$x = -1 \text{ or } x = -7$$

3.
$$-x^2 + 4x - 3 = 0$$

Multiply both sides by -1:

$$x^2 - 4x + 3 = 0$$

$$x^2 - 4x = -3$$

$$x^2 - 4x + 4 = 1$$

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

$$x-2=\pm 1$$

$$x = 3 \text{ or } x = 1$$

4.
$$-2x^2 + 12x - 14 = 0$$

Divide both sides by -2:

$$x^2 - 6x + 7 = 0$$

$$x^2 - 6x = -7$$

$$x^2 - 6x + 9 = 2$$

$$(x-3)^2=2$$

$$x - 3 = \pm \sqrt{2}$$

$$x = 3 + \sqrt{2}$$
 or $x = 3 - \sqrt{2}$

5.
$$x^2 - 10x + 16 = 0$$

$$x^2 - 10x = -16$$

$$x^2 - 10x + 25 = 9$$

$$(x-5)^2=9$$

$$x - 5 = \pm 3$$

$$x = 8 \text{ or } x = 2$$

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

Multiply both sides by -1:

$$x^2 + 2x - 8 = 0$$

$$x^2 + 2x = 8$$

$$x^2 + 2x + 1 = 9$$

$$(x+1)^2=9$$

$$x + 1 = \pm 3$$

$$x = 2 \text{ or } x = -4$$

7.
$$2x^2 - 4x - 6 = 0$$

Divide both sides by 2:

$$x^2 - 2x - 3 = 0$$

$$x^2 - 2x = 3$$

$$x^2 - 2x + 1 = 4$$

$$(x-1)^2=4$$

$$x-1=\pm 2$$

$$x = 3 \text{ or } x = -1$$

8.
$$-3x^2 + 18x - 27 = 0$$

Divide both sides by -3:

$$x^2 - 6x + 9 = 0$$

$$x^2 - 6x = -9$$

$$x^2 - 6x + 9 = 0$$

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

$$x = 3$$