

1. Solve by Using Square Roots: $x^2 - 16x + 64 = 100$

Solution:

$$(x - 8)^2 = 100$$

$$x - 8 = \pm 10$$

$$x = 8 \pm 10$$

$$\boxed{x = 10 \text{ and } x = -2}$$

2. Solve by Using Square Roots: $x^2 - 22x + 121 = 81$

Solution:

$$(x - 11)^2 = 81$$

$$x - 11 = \pm 9$$

$$x = 11 \pm 9$$

$$\boxed{x = 20 \text{ and } x = 2}$$

3. Solve by Completing the Square: $3x^2 + 12x + 15 = 0$

Solution:

$$3(x^2 + 4x +) + 15 = 0$$

$$3(x^2 + 4x + 4) + 15 - 12 = 0$$

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

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

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

$$x + 2 = \pm \sqrt{-1}$$

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

$$\boxed{x = -2 \pm i}$$

4. Solve by Completing the Square: $6x(x + 2) = -42$

Solution:

$$6x^2 + 12x = -42$$

$$6(x^2 + 2x +) = -42$$

$$6(x^2 + 2x + 1) = -42 + 6$$

$$6(x^2 + 2x + 1) = -36$$

$$(x^2 + 2x + 1) = -6$$

$$(x + 1)^2 = -6$$

$$x + 1 = \pm \sqrt{-6}$$

$$x = -1 \pm \sqrt{-6}$$

$$\boxed{x = -1 \pm \sqrt{6}i}$$

Solve by using square roots.

1. $x^2 - 8x + 16 = 15$

2. $r^2 - 19r + 15 = 1$

3. $x^2 - 18x + 81 = 5$

4. $m^2 + 8m + 16$

5. $y^2 - 24y + 144$

6. $x^2 - 26x + 169 = -13$

7. $4w^2 + 4w + 1 = 75$

8. $4x^2 - 8x + 4 = 1$

Solve by completing the square.

9. $x^2 + 6x + 3 = 0$

10. $s^2 + 2s - 6 = 0$

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

12. $t^2 - 8t - 5 = 0$

13. $z(z + 9) = 1$

14. $7t^2 + 28t + 56 = 0$

15. $6r^2 + 6r + 12 = 0$

16. $5x(x + 6) = -50$

17. $4w(w - 3) = 24$

18. $4x^2 - 30x = 12 + 10x$

19. $3s^2 + 8s = 2s - 9$