

Solving Squares: Equations like $x^2 + a = b$

Solve each equation. Remember: if $x^2 = k$, then $x = \pm\sqrt{k}$. Give exact surd answers when not a perfect square.

Section 1: Warm-Up (perfect squares)

1) $x^2 = 16$

2) $x^2 = 49$

3) $x^2 + 5 = 9$

4) $x^2 + 1 = 10$

5) $x^2 - 9 = 0$

6) $x^2 = 0$

Section 2: Two-Step Equations

7) $x^2 + 7 = 28$

8) $x^2 - 11 = 25$

9) $x^2 + 3 = 20$

10) $x^2 - 4 = 45$

11) $2x^2 = 98$

12) $3x^2 + 6 = 87$

Section 3: (complete the step and root)

13) $(x - 3)^2 = 25$

14) $(x + 2)^2 = 36$

15) $(x - 5)^2 = 4$

16) $(x + 1)^2 = 0$

Challenge Section 🤖

17) $5x^2 - 45 = 0$

18) $4(x - 2)^2 = 64$

19) $x^2 = 20$

20) $x^2 + 9 = 1$

Answers

Section 1:

1) $x = \pm 4$

2) $x = \pm 7$

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3) $x^2 = 4 \Rightarrow x = \pm 2$

4) $x^2 = 9 \Rightarrow x = \pm 3$

5) $x^2 = 9 \Rightarrow x = \pm 3$

6) $x = 0$

Section 2:

7) $x^2 = 21 \Rightarrow x = \pm\sqrt{21}$

8) $x^2 = 36 \Rightarrow x = \pm 6$

9) $x^2 = 17 \Rightarrow x = \pm\sqrt{17}$

10) $x^2 = 49 \Rightarrow x = \pm 7$

11) $x^2 = 49 \Rightarrow x = \pm 7$

12) $3x^2 = 81 \Rightarrow x^2 = 27 \Rightarrow x = \pm 3\sqrt{3}$

Section 3:

13) $x - 3 = \pm 5 \Rightarrow x = 8 \text{ or } x = -2$

14) $x + 2 = \pm 6 \Rightarrow x = 4 \text{ or } x = -8$

15) $x - 5 = \pm 2 \Rightarrow x = 7 \text{ or } x = 3$

16) $(x + 1)^2 = 0 \Rightarrow x = -1$

Challenge:

17) $5x^2 = 45 \Rightarrow x^2 = 9 \Rightarrow x = \pm 3$

18) $4(x - 2)^2 = 64 \Rightarrow (x - 2)^2 = 16 \Rightarrow x - 2 = \pm 4 \Rightarrow x = 6 \text{ or } x = -2$

19) $x = \pm\sqrt{20} = \pm 2\sqrt{5}$

20) $x^2 = -8 \Rightarrow \text{no real solutions}$