

LESSON
9-1

Solving Equations by Taking Square Roots

Reteach

These equations have something in common. They have the same roots.

$$2x^2 - 5 = 13$$

$$2x^2 = 18$$



This comes from adding 5 to each side of $2x^2 - 5 = 13$.

But $2x^2 = 18$ is easier to read and solve.

$$2x^2 = 18$$

$$x^2 = 9$$



This comes from dividing each side of $2x^2 = 18$ by 2.

Now $x^2 = 9$ is very easy to solve.

$$x^2 = 9$$

$$x = \pm\sqrt{9}$$

$$x = \pm 3$$



This comes from taking the square roots of 9.

Here is another example.

Given

$$3x^2 + 7 = 13$$

Simpler

$$3x^2 = 6$$

Simpler still

$$x^2 = 2$$

Done

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

Identify the reason for each step in the solution.

1. $4x^2 - 1 = 15 \rightarrow 4x^2 = 16 \rightarrow x^2 = 4 \rightarrow x = \pm 2$

2. $2x^2 + 3 = 9 \rightarrow 2x^2 = 6 \rightarrow x^2 = 3 \rightarrow x = \pm\sqrt{3}$

Solve using square roots.

3. $x^2 = 9$

4. $x^2 = 16$

5. $x^2 = 1$

6. $x^2 - 400 = 0$

7. $x^2 - 49 = 0$

8. $x^2 - 64 = 0$

9. $(x - 6)^2 = 144$

10. $(x + 5)^2 = 81$

11. $(x - 4)^2 = 100$

12. $(x + 3)^2 = 121$

13. $(x - 1)^2 = 36$

14. $(x + 2)^2 = 4$
