

Unit 9 Objective 6 Remediation

Solving Quadratic Equations by Using Square Roots

Example One

Solve $3x^2 - 2 = 34$

1. Isolate the variable by getting x^2 alone
2. Take the square root of both sides of the equation
3. Remember, there are two solutions, so DON'T forget \pm
4. Simplify the square root, if possible

$$\begin{aligned}x^2 &= 12 \\ \sqrt{x^2} &= \pm\sqrt{12} \\ x &= \pm 2\sqrt{3}\end{aligned}$$

So, our two solutions are $x = 2\sqrt{3}$ or $x = -2\sqrt{3}$

Example Two

Solve $-2(x + 4)^2 = -8$

1. Isolate the parentheses $(\quad)^2$ by getting it by itself
2. Take the square root of both sides of the equation
3. Remember, there are two solutions, so DON'T forget \pm
4. Simplify the square root, if possible
5. Finally, solve for x

$$\begin{aligned}(x + 4)^2 &= 4 \\ \sqrt{(x + 4)^2} &= \pm\sqrt{4} \\ x + 4 &= \pm 2 \\ x &= -4 \pm 2\end{aligned}$$

So, our two solutions are $-4 + 2$ and $-4 - 2$ which means our solutions are $x = -2$ or $x = -6$.

Practice

1. $x^2 = 24$

1. _____

2. $4x^2 + 4 = 68$

2. _____

3. $5x^2 + 2 = 22$

3. _____

4. $8x^2 + 5 = 45$

4. _____

5. $\frac{1}{2}x^2 + 6 = 10$

5. _____

6. $15 - x^2 = -29$

6. _____

7. $(x + 1)^2 = 36$

7. _____

8. $(x + 7)^2 - 65 = 16$

8. _____

9. $3(x - 6)^2 = 12$

9. _____

10. $(x - 1)^2 - 25 = 0$

10. _____

11. $2(x + 2)^2 - 10 = 22$

11. _____

12. $\frac{1}{2}(x - 3)^2 + 4 = 36$

12. _____