

## Solving Radical Equations Example

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$\sqrt{6x^2 + x - 2}^2 = 7^2$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$\sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides



## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 2 - 49 = 49 - 49$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 2 - 49 = 49 - 49 = 0$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = \cancel{49} - 49 = 0$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

► Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

► We can solve this using the Quadratic Formula to get:

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

► Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

► We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

► Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

► We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

► Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

► We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

Checking  $x = -3$  we get:



## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

▶ We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

Checking  $x = -3$  we get:

$$\sqrt{6(-3)^2 + (-3) - 2} = \sqrt{49}$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

▶ We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

Checking  $x = -3$  we get:

$$\begin{aligned}\sqrt{6(-3)^2 + (-3) - 2} &= \sqrt{49} \\ &= 7\end{aligned}$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

► Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

► We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

Checking  $x = -3$  we get:

$$\begin{aligned}\sqrt{6(-3)^2 + (-3) - 2} &= \sqrt{49} \\ &= 7\end{aligned}$$

Checking  $x = \frac{17}{6}$  we get:

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

▶ We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

Checking  $x = -3$  we get:

$$\begin{aligned}\sqrt{6(-3)^2 + (-3) - 2} &= \sqrt{49} \\ &= 7\end{aligned}$$

Checking  $x = \frac{17}{6}$  we get:

$$\sqrt{6\left(\frac{17}{6}\right)^2 + \frac{17}{6} - 2} = \sqrt{49}$$

## Solving Radical Equations Example

**Example:** Find solutions to the equation:

$$\sqrt{6x^2 + x - 2} = 7$$

▶ Recall: to undo the square root, we **Square** both sides:

$$6x^2 + x - 2 = \sqrt{6x^2 + x - 2}^2 = 7^2 = 49$$

So, we are left with the equation:

$$6x^2 + x - 2 = 49$$

**Subtracting 49** from both sides

$$6x^2 + x - 51 = 6x^2 + x - 2 - 49 = 49 - 49 = 0$$

Leaving us with:

$$6x^2 + x - 51 = 0$$

▶ We can solve this using the Quadratic Formula to get:  $x = -3, \frac{17}{6}$

**Conclusion:** The solution to  $\sqrt{6x^2 + x - 2} = 7$  is:  $x = -3, \frac{17}{6}$

Checking  $x = -3$  we get:

$$\begin{aligned}\sqrt{6(-3)^2 + (-3) - 2} &= \sqrt{49} \\ &= 7\end{aligned}$$

Checking  $x = \frac{17}{6}$  we get:

$$\begin{aligned}\sqrt{6\left(\frac{17}{6}\right)^2 + \frac{17}{6} - 2} &= \sqrt{49} \\ &= 7\end{aligned}$$