

Lesson 2.4 Using Roots to Solve Equations

Equations with exponential variables can be solved using the inverse operation. In this case, using roots will help to solve the problem.

$$x^2 = 121$$

Step 1: Evaluate the problem to find out which root to use. In this case, the exponent is 2, so you would use the square root as the inverse operation.

$$\sqrt{x^2} = \sqrt{121}$$

Step 2: Find the root of both sides of the equation.

$$x = 11$$

Step 3: Solve the problem.

Solve each problem by using roots. Show your work and write fractions in simplest form.

a

1. $x^2 = \frac{16}{169}$

$$x = \underline{\hspace{2cm}}$$

b

$$729 = x^3$$

$$x = \underline{\hspace{2cm}}$$

c

$$x^2 = \frac{8}{125}$$

$$x = \underline{\hspace{2cm}}$$

2. $25 = x^2$

$$x = \underline{\hspace{2cm}}$$

$$x^2 = \frac{25}{64}$$

$$x = \underline{\hspace{2cm}}$$

$$x^3 = 512$$

$$x = \underline{\hspace{2cm}}$$

3. $\frac{9}{36} = x^2$

$$x = \underline{\hspace{2cm}}$$

$$x^3 = 512$$

$$x = \underline{\hspace{2cm}}$$

$$x^2 + 2 = 38$$

$$x = \underline{\hspace{2cm}}$$

4. $68 - 4 = x^3$

$$x = \underline{\hspace{2cm}}$$

$$x^2 - 5 = 44$$

$$x = \underline{\hspace{2cm}}$$

$$x^3 + 4 = 5$$

$$x = \underline{\hspace{2cm}}$$