

# Teacher version

**Unit 3: Lesson 04** Solving equations having rational & variable exponents

Many times it is desirable to "get rid" of an exponent in the process of solving an equation. For example, consider:

$$(x - 2)^{1/3} = 5$$

Simply raise both sides to the 3 power and  $x - 2$  will be left with no exponent. From that point it is easy to solve for  $x$ .

$$\begin{aligned} [(x-2)^{1/3}]^3 &= [5]^3 \\ (x-2)^1 &= 125 \\ x-2 &= 125 \\ x &= 125+2 = \boxed{127} \end{aligned}$$

**Rule:** When raising both sides of an equation to an even power (or if the numerator of a fractional power is even), extraneous roots (answers) can be produced. In this case substitute prospective roots back into the original equation to see if they really work.

Example 1:  $x^{1/2} = 8$

Example 2:  $(4x)^{1/3} + 5 = 0$

$$\begin{aligned} [x^{1/2}]^2 &= [8]^2 \\ x &= [64]^{1/1} = \boxed{64} \end{aligned}$$

$$\begin{aligned} (4x)^{1/3} &= -5 \\ [(4x)^{1/3}]^3 &= [-5]^3 \\ 4x &= -125 \\ x &= -125/4 = \boxed{-31.25} \end{aligned}$$

Hand written as a "real person" would do

Teacher models notes and examples during lecture.

**Assignment:** Solve for the variable and check for extraneous roots when appropriate.

1.  $x^{1/2} - 12 = 34$

2.  $(2x - 1)^{1/3} - 2 = 0$

$$\begin{aligned} x^{1/2} &= 46 \\ [x^{1/2}]^2 &= [46]^2 \\ x &= [2116]^{1/1} \\ x &= (\pm\sqrt{2116})^1 \\ x &= (+45)^1 = \boxed{45} \end{aligned}$$

$$\begin{aligned} (2x-1)^{1/3} &= 2 \\ [(2x-1)^{1/3}]^3 &= [2]^3 \\ 2x-1 &= 8 \\ 2x &= 8+1 \\ x &= \boxed{4.5} \end{aligned}$$

# Student version

## Solving equations having rational & variable exponents

Many times it is desirable to "get rid" of an exponent in the process of solving an equation. For example, consider:

Simply raise both sides to the 3 power and  $x - 2$  will be left with no exponent. From that point it is easy to solve for  $x$ .

When raising both sides of an equation to an even power (or if the numerator of a fractional power is even), extraneous roots

can be produced. In this case substitute prospective roots back into the original equation to see if they really work.

Example 2:  $(4x)^{1/3} + 5 = 0$

Students take notes and work the examples here. Blank assignment area.

Solve for the variable and check for extraneous roots when appropriate.

2.  $(2x - 1)^{1/3} - 2 = 0$

# Absent-student version

## Solving equations having rational & variable exponents

Many times it is desirable to "get rid" of an exponent in the process of solving an equation. For example, consider:

Simply raise both sides to the 3 power and  $x - 2$  will be left with no exponent. From that point it is easy to solve for  $x$ .

$$\begin{aligned} [(x-2)^{1/3}]^3 &= [5]^3 \\ (x-2)^1 &= 125 \\ x-2 &= 125 \\ x &= 125+2 = \boxed{127} \end{aligned}$$

When raising both sides of an equation to an even power (or if the numerator of a fractional power is even), extraneous roots can be produced. In this case substitute prospective roots back into the original equation to see if they really work.

Example 2:  $(4x)^{1/3} + 5 = 0$

$$\begin{aligned} (4x)^{1/3} &= -5 \\ [(4x)^{1/3}]^3 &= [-5]^3 \\ 4x &= -125 \\ x &= -125/4 = \boxed{-31.25} \end{aligned}$$

Absent student takes their notes from this version. Assigns a part of the blank area.

Solve for the variable and check for extraneous roots when appropriate.

2.  $(2x - 1)^{1/3} - 2 = 0$

# Blue Pelican Math Pre Calc Answers

**Sadler**



**Blue Pelican Math Pre Calc Answers:**

## **Blue Pelican Math Pre Calc Answers** Book Review: Unveiling the Power of Words

In a global driven by information and connectivity, the ability of words has be much more evident than ever. They have the capacity to inspire, provoke, and ignite change. Such may be the essence of the book **Blue Pelican Math Pre Calc Answers**, a literary masterpiece that delves deep in to the significance of words and their impact on our lives. Compiled by a renowned author, this captivating work takes readers on a transformative journey, unraveling the secrets and potential behind every word. In this review, we shall explore the book is key themes, examine its writing style, and analyze its overall effect on readers.

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