



Math Virtual Learning

College Prep Algebra

May 5, 2020



College Prep Algebra
Lesson: May 5, 2020

Objective/Learning Target:
To determine the Least Common Multiple
of the denominators of a rational equation.

Let's Get Started:

What is a Least Common Multiple?

The least common multiple of two numbers is the smallest number that is a multiple of both of them



While that description is accurate, it doesn't help much in terms of how to find a least common multiple. And that is what we are going to learn today!

The next two slides have videos which explain the process for finding the least common multiple of algebraic expressions. We will use the same technique on the examples which follow the videos.

Determining the Least Common Multiple: Video 1

Find the least common multiple of 15x, 20, and $(x^2 + 5x)$.

$$15x = 15 \cdot x = 3 \cdot 5 \cdot x$$


$$20 = 2 \cdot 2 \cdot 5$$


$$(x^2 + 5x) = x \cdot (x + 5)$$

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LCM =

Determining the Least Common Multiple: Video 2

Video 2

1) Find the LCM of the denominators of the rational equation

$$\frac{1}{x^2} + \frac{4}{x} = \frac{3}{x^2}$$

We need to factor each of the denominators

$$x^2 = \underline{x \cdot x} \quad x = \underline{x} \quad x^2 = \underline{x \cdot x}$$

The LCM must contain the factors of all three denominators, but it shouldn't contain more than that.

$$\text{LCM} = \underline{x \cdot x} \text{ or } x^2$$

2) Find the LCM of the denominators of the rational equation

$$\frac{4}{x+1} + \frac{1}{x^2 - 5x - 6} = \frac{1}{x-6}$$

We need to factor each of the denominators

$$x + 1 = \underline{(x + 1)} \quad x^2 - 5x - 6 = \underline{(x - 6)}\underline{(x + 1)} \quad x - 6 = \underline{(x - 6)}$$

The LCM must contain the factors of all three denominators, but it shouldn't contain more than that.

$$\text{LCM} = \underline{(x + 1)}\underline{(x - 6)}$$

3) Find the LCM of the denominators of the rational equation

$$\frac{x^2 - 3x - 4}{x^3 - x^2} - \frac{1}{x^2} = \frac{x - 2}{x^2}$$

We need to factor each of the denominators

$$x^3 - x^2 = \underline{x^2}(x - 1) = \underline{x} \cdot \underline{x}(x - 1) \qquad x^2 = \underline{x} \cdot \underline{x} \qquad x^2 = \underline{x} \cdot \underline{x}$$

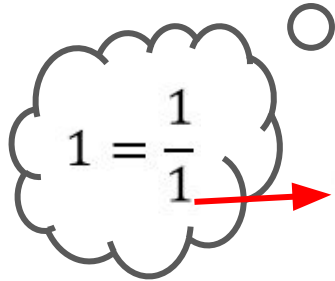
The LCM must contain the factors of all three denominators, but it shouldn't contain more than that.

$$\text{LCM} = \underline{x} \cdot \underline{x}(x - 1) \text{ or } \underline{x^2}(x - 1)$$

4) Find the LCM of the denominators of the rational equation

$$1 - \frac{3}{x^2 + 3x - 4} = \frac{x - 2}{x - 1}$$

We need to factor each of the denominators



$$1 = \underline{1} \quad x^2 + 3x - 4 = \underline{(x + 4)}\underline{(x - 1)} \quad x - 1 = \underline{(x - 1)}$$

The LCM must contain the factors of all three denominators, but it shouldn't contain more than that.

$$\text{LCM} = \underline{1} \cdot \underline{(x + 4)}\underline{(x - 1)} \text{ or } (x + 4)(x - 1)$$

Practice:

Find ONLY the LCM of the rational equations

[Practice Worksheet](#)

[Practice Answers](#)

Need more practice?

[Practice Worksheet #2](#)

[Practice #2 Answers](#)