

FINDING the LCD of RATIONAL EXPRESSIONS HANDOUT

Steps to Finding the LCD of Rational Expressions:

- Step 1:** Factor each denominator completely.
- Step 2:** List each different factor from Step 1, the greatest number of times it appears in a denominator.
- Step 3:** Multiply the factors from Step 2— this is the LCD.
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Example

Find the LCD of the terms:

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

There are four denominators:

$$x \quad , \quad x + 1 \quad , \quad x^2 + 2x + 1 \quad , \quad x^2 + 3x + 2$$

Step 1: Factoring each denominator, we get

$$x \quad , \quad x + 1 \quad , \quad (x + 1)^2 \quad , \quad (x + 1)(x + 2)$$

Step 2: The DIFFERENT factors are

$$x \quad , \quad x + 1 \quad , \quad x + 2$$

- The highest power of x is **1**,
- The highest power of $(x + 1)$ is **2**,
- And the highest power of $(x + 2)$ is **1**

Step 3: LCD = $x(x + 1)^2(x + 2)$