

R5 Add + Subtract Rational Expressions

Day 3 (1)

Ex 4 (a) $\frac{5}{9x^2} + \frac{1}{6x}$

$$\left(\frac{3}{3}\right)\frac{1}{5} + \frac{1}{3}\left(\frac{5}{5}\right)$$

$$\frac{3}{15} + \frac{5}{15} = \frac{8}{15}$$

$$\frac{2}{25} + \frac{3}{20}$$

For Least Common Denominator (LCD), form the product of all the prime factors, with each factor having the greatest exponent that appears on it.

$$\rightarrow \begin{matrix} 5^2 & 2^2 \cdot 5 \\ \underline{25} & \underline{20} \end{matrix}$$

$$25 \cdot 2^2 = 100 \text{ LCD}$$

$$\left(\frac{4}{4}\right)\frac{2}{25} + \frac{3}{20}\left(\frac{5}{5}\right)$$

$$\frac{8}{100} + \frac{15}{100} = \frac{23}{100}$$

(a) $\frac{5}{9x^2} + \frac{1}{6x} \rightarrow 2 \cdot 3 \cdot x \Rightarrow \text{LCD} = 2^1 \cdot 3^2 \cdot x^2$

↳ prime factors $3^2 x^2$

$$= 2 \cdot 9 \cdot x^2$$

$$\text{LCD} = 18x^2$$

$$\left(\frac{2}{2}\right)\frac{5}{9x^2} + \frac{1}{6x}\left(\frac{3x}{3x}\right)$$

$$\frac{10}{18x^2} + \frac{3x}{18x^2} =$$

$$\frac{10 + 3x}{18x^2}$$

RS

Ex 4

b)

$$\frac{y}{y-2} + \frac{8}{2-y} \left(\begin{array}{c} -1 \\ -1 \end{array} \right)$$

Day 3

2

$$(2-y)(-1) = -2+y = y-2 \leftarrow \text{LCD}$$

$$\frac{y}{y-2} + \frac{-8}{y-2} = \boxed{\frac{y-8}{y-2}}$$

$$c) \frac{3}{(x-1)(x+2)} - \frac{1}{(x+3)(x-4)}$$

$$\text{LCD} \rightarrow (x-1)(x+2)(x+3)(x-4)$$

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

$$= \frac{3(x^2 - 4x + 3x - 12) - 1(x^2 + 2x - 1x - 2)}{(x-1)(x+2)(x+3)(x-4)}$$

$$= \frac{3(x^2 - x - 12) - 1(x^2 + x - 2)}{(x-1)(x+2)(x+3)(x-4)}$$

$$= \frac{3x^2 - 3x - 36 - x^2 - x + 2}{(x-1)(x+2)(x+3)(x-4)}$$

$$= \boxed{\frac{2x^2 - 4x - 34}{(x-1)(x+2)(x+3)(x-4)}}$$