

Sample Problems - Adding and Subtracting with the Same

Denominator

$$\begin{aligned}
 \text{a) } \frac{5}{3x} + \frac{7}{3x} & \quad \frac{npv}{x=0} \\
 & = \frac{5+7}{3x} \\
 & = \frac{12}{3x} \\
 & = \frac{4}{x}
 \end{aligned}$$

$$\begin{aligned}
 \text{b) } \frac{3x}{x-1} - \frac{x+5}{x-1} & \quad \frac{npv}{x=1} \\
 & = \frac{3x - (x+5)}{x-1} \\
 & = \frac{3x - x - 5}{x-1} \\
 & = \frac{2x - 5}{x-1}
 \end{aligned}$$

$$\begin{aligned}
 \text{c) } \frac{4x+1}{2x-1} - \frac{2x-3}{2x-1} & \quad \frac{npv}{x=\frac{1}{2}} \\
 & = \frac{4x+1 - (2x-3)}{2x-1} \\
 & = \frac{4x+1 - 2x+3}{2x-1} \\
 & = \frac{2x+4}{2x-1}
 \end{aligned}$$

Lowest Common Denominators (LCDs)

Sample Problems - Monomial Denominators

$$\text{a) } \frac{1}{34x}, \frac{x+2}{6x^2} \quad \text{LCD: } 24x^2$$

$$\text{b) } \frac{b}{-4a^5}, \frac{c}{4a^3} \quad \text{LCD: } 32a^5$$

$$\text{c) } \frac{4}{15x^2}, \frac{x^2-1}{20x^3} \quad \text{LCD: } 60x^3$$

$$\text{d) } \frac{3}{14x^2y}, \frac{x+y}{21xy} \quad \text{LCD: } 42x^2y^2$$

Sample Problems - Polynomial Denominators

$$\text{a) } \frac{5}{x-2}, \frac{3}{x-4} \quad \text{LCD: } (x-2)(x-4)$$

$$\text{b) } \frac{-7}{x-6}, \frac{4}{x+5} \quad \text{LCD: } (x-6)(x+5)$$

$$\text{c) } \frac{x+3}{x-7}, \frac{x+1}{x-1} \quad \text{LCD: } (x-7)(x-1)$$

$$\begin{aligned}
 \text{d) } \frac{x-5}{x^2-9}, \frac{x-4}{x-3} \\
 \frac{x-5}{(x-3)(x+3)} \quad \text{LCD: } (x-3)(x+3)
 \end{aligned}$$

$$\begin{aligned}
 \text{e) } \frac{2}{x^2+4x-5}, \frac{x^2+2}{x^2+7x+10} \\
 \frac{2}{(x+5)(x-1)}, \frac{x^2+2}{(x+5)(x+2)} \quad \text{LCD: } (x+5)(x-1)(x+2)
 \end{aligned}$$