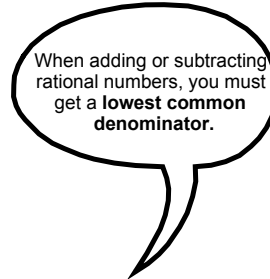


## 6.3 Adding and Subtracting Rational Expressions

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### Adding or Subtracting Rational Expressions

Review:  $\frac{1}{3} + \frac{7}{4}$



**Example: Add or subtract with like denominators**

(i)  $\frac{2}{x} + \frac{7}{x}$

(ii)  $\frac{2x}{x+4} + \frac{8}{x+4}$

(iii)  $\frac{2a}{b} - \frac{a-1}{b}$

(iv)  $\frac{x^2}{x-2} + \frac{3x}{x-2} - \frac{10}{x-2}$

## Your Turn

Determine each sum or difference. Express each answer in simplest form. Identify all non-permissible values.

a) 
$$\frac{m}{n} - \frac{m+1}{n}$$

b) 
$$\frac{10m-1}{4m-3} - \frac{8-2m}{4m-3}$$

c) 
$$\frac{2x^2-x}{(x-3)(x+1)} + \frac{3-6x}{(x-3)(x+1)} - \frac{8}{(x-3)(x+1)}$$

**Add or Subtract Rational Expressions With Unlike Denominators**

Example: Simplify. Express your answers in simplest form.

(i)  $\frac{2}{x} + \frac{7}{3x}, \quad x \neq 0$

(ii)  $\frac{2}{x} + \frac{3}{x+5}, \quad x \neq 0, -5$

(iii)  $\frac{2}{y} + \frac{4}{x^2} - 3 \quad x \neq 0, y \neq 0$

(iv)  $\frac{y-2}{y^2-4} + \frac{y-2}{y+2} \quad y \neq \pm 2$

(v)  $\frac{y^2-20}{y^2-4} + \frac{y-2}{y+2} \quad y \neq \pm 2$

(vi)  $\frac{1 + \frac{1}{x}}{x - \frac{1}{x}} \quad x \neq 0, \pm 1$

## Your Turn

Simplify. What are the non-permissible values?

a)  $\frac{4}{p^2 - 1} + \frac{3}{p + 1}$

b)  $\frac{x - 1}{x^2 + x - 6} - \frac{x - 2}{x^2 + 4x + 3}$

c)  $\frac{2 - \frac{4}{y}}{y - \frac{4}{y}}$

Key Ideas p. 335

Assign p. 336 -337

#1(de), 2, 3, 5(bdf), 6(bce), 7(bc), 8, 10(bd), 15