



Adding Fractions



1. Express the following as a single fraction:

i. $\frac{3}{x+2} + \frac{2}{x+5}$

ii. $\frac{2}{2x-1} + \frac{4}{3x+2}$

iii. $\frac{4}{x+4} - \frac{5}{x-3} + \frac{3}{2}$

iv. $\frac{5}{4x-7} + \frac{1}{5} - \frac{7}{6x+4}$

v. $\frac{6}{2-x} - \frac{9}{5-3x}$

2. Express the following as a single fraction.

(i) $\frac{x}{x+y} + \frac{y}{x+y}$

(ii) $\frac{3x}{2x+2} + \frac{x}{4}$

(iii) $\frac{1}{x-1} + \frac{1}{x+1}$

(iv) $\frac{5}{x} + \frac{6x}{x+2}$

(v) $\frac{3}{x^2} + \frac{4}{x} + 1$

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

(vii) $\frac{5x-6}{x^2+x-6} - \frac{2}{x+3}$

(viii) $\frac{x}{y^2+xy} - \frac{y}{x^2+xy}$

(ix) $\frac{1}{x-1} + x - 1 + \frac{x}{1-x}$





$$(x) \quad \frac{4x}{4x^2 - 9} + \frac{x}{2x - 3}$$

3. The following problems reduce to a constant when simplified. Find each constant.

$$(i) \quad \frac{z - 2}{z - 1} - \frac{1}{1 - z}$$

$$(ii) \quad \frac{4w + 1}{6w - 1} + \frac{2}{2 - 12w} + \frac{8w - 2}{6w - 1}$$

$$(iii) \quad \frac{x + 4}{x^2 + 5x + 6} - \frac{3}{x^2 + 3x} - \frac{x - 2}{x^2 + 2x}$$

$$(iv) \quad \frac{x^2 + 4x}{x + 4} + \frac{x - 3}{x^2 - 9} - \frac{x^3 - 3x}{x(x + \sqrt{3})} - \frac{\sqrt{3}x + 3\sqrt{3} + 1}{x + 3}$$

4. Show that the following statement is true.

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

