



Adding Fractions SOLUTIONS



Tutorial
COLLEGE

1. i. $\frac{5x + 19}{(x + 2)(x + 5)}$

ii. $\frac{14x}{(2x - 1)(3x + 2)}$

iii. $\frac{3x^2 + 1x - 100}{(x + 4)(x - 3)(2)}$

iv. $\frac{24x^2 + 26x + 317}{(4x - 7)(5)(6x + 4)}$

v. $\frac{12 - 9x}{(2 - x)(5 - 3x)}$

2. Express the following as a single fraction.

(i)

1 (S*)

(ii)

$\frac{7x + x^2}{4x + 4}$

(iii)

$\frac{2x}{x^2 - 1}$

(iv)

$\frac{6x^2 + 5x + 10}{x^2 + 2x}$

(v)

$\frac{(x + 1)(x + 3)}{x^2}$ (S*)

(vi)

$\frac{8x + 1}{(x - 1)(x + 1)}$ (S*)

(vii)

$\frac{3x - 2}{(x + 3)(x - 2)}$ (S*)

(viii)

$\frac{x - y}{xy}$ (S*)

(ix)

$\frac{xy}{x - 2}$





$$\begin{array}{r} \text{(x)} \\ 2x^2 + 7x \\ \hline 4x^2 - 9 \end{array}$$

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

(i) 1

(ii) 2

(iii) 0

(iv) 3

4. Show.

Question 2 (i)

$$\begin{aligned} & \frac{x}{x+y} + \frac{y}{x+y} \\ &= \frac{x(1) + y(1)}{x+y} \\ &= \frac{x+y}{x+y} \\ &= 1 \end{aligned}$$

Question 2 (v)

$$\begin{aligned} & \frac{3}{x^2} + \frac{4}{x} + 1 \\ &= \frac{3(1) + 4(x) + 1(x^2)}{x^2} \\ &= \frac{3 + 4x + x^2}{x^2} \\ &= \frac{(x+1)(x+3)}{x^2} \end{aligned}$$

Question 2 (vi)

$$\begin{aligned} & \frac{4}{x-1} + \frac{3}{x+1} + \frac{x}{x^2-1} \\ &= \frac{4}{x-1} + \frac{3}{x+1} + \frac{x}{(x-1)(x+1)} \\ &= \frac{4(x+1) + 3(x-1) + x(1)}{(x-1)(x+1)} \\ &= \frac{4x+4+3x-3+x}{(x-1)(x+1)} \\ &= \frac{8x+1}{(x-1)(x+1)} \end{aligned}$$



**Question 2 (vii)**

$$\begin{aligned} & \frac{5x-6}{x^2+x-6} - \frac{2}{x+3} \\ &= \frac{5x-6}{(x+3)(x-2)} - \frac{2}{x+3} \\ &= \frac{(5x-6)(1) - 2(x-2)}{(x+3)(x-2)} \\ &= \frac{5x-6-2x+4}{(x+3)(x-2)} \\ &= \frac{3x-2}{(x+3)(x-2)} \end{aligned}$$

Question 2 (viii)

$$\begin{aligned} & \frac{x}{y^2+xy} - \frac{y}{x^2+xy} \\ &= \frac{x}{y(y+x)} - \frac{y}{x(x+y)} \\ &= \frac{x(x) - y(y)}{(x)(y)(x+y)} \\ &= \frac{x^2 - y^2}{(x)(y)(x+y)} \\ &= \frac{(x-y)(x+y)}{(x)(y)(x+y)} \\ &= \frac{x-y}{xy} \end{aligned}$$

