

Algebraic Fractions

Adding, Subtracting, Multiplying, Dividing

Question 1

Simplify the following expressions into a single fraction.

a) $\frac{1}{x+2} + \frac{3}{x+1}$

b) $\frac{4}{y+1} - \frac{3}{y-2}$

c) $\frac{2}{2t+1} - \frac{1}{t+3}$

d) $\frac{3}{2(w+1)} + \frac{1}{4(w-1)}$

$$\boxed{\frac{4x+7}{(x+1)(x+2)}}, \quad \boxed{\frac{y-11}{(y+1)(y-2)}}, \quad \boxed{\frac{5}{(2t+1)(t+3)}}, \quad \boxed{\frac{7w-5}{4(w+1)(w-1)}}$$

Question 2

Simplify the following algebraic expressions giving your final answer as a single fraction in its simplest form.

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

b) $\frac{y-10}{(y-3)(y+4)} - \frac{y-8}{(y-3)(2y-1)}$

c) $1 + \frac{4t}{2t-5} - \frac{15}{2t^2-7t+5}$

d) $\frac{2w^2}{(w+1)^3} + \frac{3w}{(w+1)^2} - \frac{4}{w+1}$

$$\boxed{\frac{2}{x-3}}, \quad \boxed{\frac{y-14}{(y+4)(2y-1)}}, \quad \boxed{\frac{3t+2}{t-1}}, \quad \boxed{\frac{w^2-5w-4}{(w+1)^3}}$$

Question 3

Simplify the following algebraic expressions giving your final answer as a single fraction in its simplest form:

$$\text{a) } \frac{\frac{x^2 + x - 6}{x^2 - 9}}{\frac{x - 2}{4}}$$

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

$$\text{c) } \frac{(2x+1)(2x-5) + 4(2x-1)}{\frac{2x+3}{2x+1}}$$

$$\boxed{\frac{4}{x-3}}, \quad \boxed{\frac{5}{x+4}}, \quad \boxed{4x^2 - 4x - 3}$$