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### Question 1

Express each of the following into partial fractions.

a)  $\frac{6x}{(x-1)(x+2)}$

b)  $\frac{7y-11}{(y+2)(y-3)}$

c)  $\frac{19-4t}{(t+4)(t-3)}$

d)  $\frac{w-22}{(w+2)(w-6)}$

e)  $\frac{8z+7}{(z+2)(z-7)}$

$$\boxed{\frac{2}{x-1} + \frac{4}{x+2}}, \quad \boxed{\frac{2}{y-3} + \frac{5}{y+2}}, \quad \boxed{\frac{1}{t-3} - \frac{5}{t+4}}, \quad \boxed{\frac{3}{w+2} - \frac{2}{w-6}}, \quad \boxed{\frac{1}{z+2} + \frac{7}{z-7}}$$

## Question 2

Express each of the following into partial fractions.

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

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

c)  $\frac{4t^2 - 5t + 3}{(t+1)(t-1)(t-2)}$

d)  $\frac{12w^2 - 4w + 3}{(2w+1)(2w-1)(2w-3)}$

$$\boxed{\frac{1}{x} + \frac{1}{2x-1} - \frac{2}{x+1}}, \quad \boxed{\frac{1}{y+3} - \frac{5}{y+1} + \frac{8}{2y+1}}, \quad \boxed{\frac{2}{t+1} - \frac{1}{t-1} + \frac{3}{t-2}}, \quad \boxed{\frac{1}{2w+1} - \frac{1}{2w-1} + \frac{3}{2w-3}}$$

### Question 3

Express each of the following into partial fractions.

a)  $\frac{2x^2 - x - 3}{(x-2)(x-1)^2}$

b)  $\frac{y^2 - 2y + 8}{(y+2)(y-2)^2}$

c)  $\frac{-3t^2 + 12t + 7}{(t-3)(t+1)^2}$

d)  $\frac{-3w^2 + 10w - 11}{(w-2)(w-1)^2}$

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

#### Question 4

Express each of the following into partial fractions.

a)  $\frac{2x^2 - 8x + 5}{(x-1)(x-2)}$

b)  $\frac{4x^2 - 5x - 15}{(x+1)(x-2)}$

c)  $\frac{2x^3 - 7x^2 + 6x - 3}{(x-1)(x-2)}$

d)  $\frac{x^3 - 2x^2 - 4x + 7}{x^2 - 1}$

$$\boxed{2 + \frac{1}{x-1} - \frac{3}{x-2}}, \quad \boxed{4 + \frac{2}{x+1} - \frac{3}{x-2}}, \quad \boxed{2x - 1 + \frac{2}{x-1} - \frac{3}{x-2}}, \quad \boxed{x - 2 + \frac{1}{x-1} - \frac{4}{x+1}}$$