Adding Algebraic Fractions

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1) Adding Algebraic Fractions: Easier

Q1.

Simplify fully $\dfrac{x+2}{2} + \dfrac{2x+3}{5}$

$$\dfrac{5(x+2)}{10} + \dfrac{2(2x+3)}{2}$$

$$= \dfrac{5x+10}{10} + \dfrac{4x+6}{10}$$

$$= \dfrac{9x+16}{10}$$

....

(Total for question = 3 marks)

Q2 . Simplify fully

$$\dfrac{3}{4-x} - \dfrac{2}{x}$$

$$\dfrac{3x}{x(4-x)} - \dfrac{2(4-x)}{x(4-x)}$$

$$= \dfrac{3x-8+2x}{x(4-x)}$$

$$= \dfrac{5x-8}{x(4-x)}$$

....

(Total for question = 3 marks)

1) Adding Algebraic Fractions: Medium

Q3. Write as a single fraction in its simplest form

$$\frac{3x}{x-2} + \frac{4x+8}{x^2-4}$$

$$\frac{3x}{x-2} + \frac{4x+8}{(x-2)(x+2)}$$

$$= \frac{3x(x+2)}{(x-2)(x+2)} + \frac{4x+8}{(x-2)(x+2)}$$

$$= \frac{3x^2+6x}{(x-2)(x+2)} + \frac{4x+8}{(x-2)(x+2)}$$

$$= \frac{3x^2+10x+8}{(x-2)(x+2)}$$

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

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

....

(Total for question = 4 marks)

Q4. Solve $\quad \dfrac{2x-1}{5} + \dfrac{4x+1}{2} = 5$

$$\frac{2(2x-1)}{10} + \frac{5(4x+1)}{10} = 5$$

$$\frac{4x-2}{10} + \frac{20x+5}{10} = 5$$

$$4x - 2 + 20x + 5 = 50$$

$$24x + 3 = 50$$

$$24x = 47$$

$$x = \frac{47}{24} \quad or\ 1.958\dot{3}\ or\ 1\frac{23}{24}$$

x = ...

(Total for Question is 3 marks)

1) Adding Algebraic Fractions: Harder

Q5. Solve $\dfrac{x+3}{2x} - \dfrac{3x+5}{5x} = 4$

$$\frac{5(x+3)}{10x} - \frac{2(3x+5)}{10x} = 4$$

$$\frac{5x + 15 - 6x - 10}{10x} = 4$$

$$-x + 5 = 40x$$

$$5 = 41x$$

$$x = \frac{5}{41}$$

x = ...

(Total for question is 3 marks)

Q6. Solve

$$\frac{a - 1}{2} + \frac{2a + 1}{6} = \frac{5}{6}$$

$$\frac{3(a - 1)}{6} + \frac{2a + 1}{6} = \frac{5}{6}$$

$$\frac{3a - 3 + 2a + 1}{6} = \frac{5}{6}$$

$$\frac{5a - 2}{6} = \frac{5}{6}$$

$$5a - 2 = 5$$

$$5a = 7 \qquad a = \frac{7}{5}$$

....