

P484 8a

$$\frac{4}{x+1} + \frac{5}{x+2} = 2$$

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

$$4x + 8 + 5x + 5 = 2(x^2 + x + 2x + 2)$$

$$9x + 13 = 2x^2 + 6x + 4$$

$$0 = 2x^2 + 6x + 4 - 9x - 13$$

$$0 = 2x^2 - 3x - 9$$

$$\begin{array}{r} 2x - 9 \\ = -18 \end{array}$$

$$0 = 2x^2 + 3x - 6x - 9$$

$$\begin{array}{r} +1 -18 \\ -1 +18 \end{array}$$

$$0 = x(2x+3) - 3(2x+3)$$

$$\begin{array}{r} +2 -4 \\ -2 +9 \end{array}$$

$$0 = (x-3)(2x+3)$$

$$\begin{array}{r} +3 -6\checkmark \\ -3 +6 \end{array}$$

$$\text{Either } x-3=0 \quad \text{or} \quad 2x+3=0$$

$$x = 3$$

$$2x = -3$$

$$x = -\frac{3}{2}$$

$$9a) \quad \frac{x^2 + 2x - 3}{2x^2 + 7x + 3} = \frac{(x+3)(x-1)}{(x+3)(2x+1)}$$

$2x^2$

-5

$+1 +6$

$$2x^2 + x + 6x + 3$$

$$= x - 1$$

$$\overline{2x+1}$$

$$x(2x+1) + 3(2x+1)$$

$$(x+3)(2x+1)$$

$$9b) \quad \frac{18}{4x-1} - \frac{1}{x+1} = 1$$

$$\frac{18(4x-1)(x+1)}{(4x-1)} - \frac{1(4x-1)(x+1)}{(x+1)} = 1(4x-1)(x+1)$$

$$18x + 18 - 4x + 1 = 4x^2 - x + 4x - 1$$

$$14x + 19 = 4x^2 + 3x - 1$$

$$0 = 4x^2 + 3x - 1 - 14x - 19$$

$$0 = 4x^2 - 11x - 20$$

$$\begin{aligned} 4x-20 \\ =-80 \end{aligned}$$

$$0 = 4x^2 - 16x + 5x - 20$$

$$-16+5$$

$$0 = 4x(x-4) + 5(x-4)$$

$$0 = (4x+5)(x-4)$$

$$\text{Either } \begin{aligned} 4x+5 &= 0 \\ 4x &= -5 \\ x &= -\frac{5}{4} \end{aligned} \quad \text{or } \begin{aligned} x-4 &= 0 \\ x &= 4 \end{aligned}$$

8c

$$\frac{2x-1}{2} - \frac{6}{x+1} = 1$$

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

$$2x^2 - x + 2x - 1 - 12 = 2x + 2$$

$$2x^2 - x + 2x - 1 - 12 - 2x - 2 = 0$$

$$2x^2 - x - 15 = 0$$

$$\begin{array}{r} 2x-15 \\ = -30 \\ -6+5 \end{array}$$

$$2x^2 - 6x + 5x - 15 = 0$$

$$\begin{aligned} 2x(x-3) + 5(x-3) &= 0 \\ (2x+5)(x-3) &= 0 \end{aligned}$$

Either $2x+5=0$ or $x-3=0$

$$\begin{array}{l} 2x = -5 \\ x = \underline{-\frac{5}{2}} \end{array} \qquad \qquad \begin{array}{l} x-3=0 \\ \underline{x=3} \end{array}$$