1) Solve $\frac{4x-1}{5} + \frac{x+4}{2} = 3$

$$\frac{10(4x-1)}{5} + \frac{10(x+4)}{2} = 10 \times 3$$

$$2(4x-1) + 5(x+4) = 30$$

$$8x - 2 + 5x + 20 = 30$$

$$13x + 18 = 30$$

$$13x = 30 - 18$$

$$13x = 12$$

$$x = \frac{12}{13}$$

2) Solve $\frac{x+1}{2} + \frac{2x-1}{3} = \frac{5}{6}$

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

$$3(x+1) + 2(2x-1) = 5$$

$$3x + 3 + 4x - 2 = 5$$

$$7x + 1 = 5$$

$$7x = 5 - 1$$

$$7x = 4$$

$$x = \frac{4}{7}$$

3) Solve $\frac{3x-2}{4} - \frac{2x+5}{3} = \frac{1-x}{6}$

$$\frac{12(3x-2)}{4} - \frac{12(2x+5)}{3} = \frac{12(1-x)}{6}$$

$$3(3x-2) - 4(2x+5) = 2(1-x)$$

$$9x - 6 - 8x - 20 = 2 - 2x$$

$$9x - 8x + 2x = 2 + 6 + 20$$

$$3x = 28$$

$$x = \frac{28}{3}$$

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4) Solve $\frac{x+1}{3} + \frac{2x+5}{4} = 2$

$$\frac{12(x+1)}{3} + \frac{12(2x+5)}{4} = 12 \times 2$$

$$4(x+1) + 3(2x+5) = 24$$

$$4x + 4 + 6x + 15 = 24$$

$$10x + 19 = 24$$

$$10x = 24 - 19$$

$$10x = 5$$

$$x = \frac{5}{10}$$

$$x = \frac{1}{2}$$

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5) Solve $\frac{x+2}{3x} + \frac{x-2}{2x} = 3$

$$\frac{6x(x+2)}{3x} + \frac{6x(x-2)}{2x} = 6x \times 3$$

$$2(x+2) + 3(x-2) = 18x$$

$$2x + 4 + 3x - 6 = 18x$$

$$-2 = 18x - 2x - 3x$$

$$-2 = 13x$$

$$-\frac{2}{13} = x$$

$$x = -\frac{2}{13}$$

6) Solve $\frac{4-2x}{x+1} = x$

$$4 - 2x = x(x+1)$$

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

$$0 = x^2 + x + 2x - 4$$

$$0 = x^2 + 3x - 4$$

$$0 = (x-1)(x+4)$$

$$\Rightarrow \underline{x = 1} \quad \text{or} \quad \underline{x = -4}$$