

$$1. \frac{12}{x} = \frac{30}{75}$$

$$30x = 900$$

$$x = 30$$

$$2. \frac{x-5}{15} = \frac{4}{5}$$

$$\begin{array}{r} 5x - 25 = 60 \\ + 25 \quad + 25 \\ \hline \end{array}$$

$$5x = 85$$

$$x = 17$$

$$3. \frac{3x+1}{x-1} = \frac{5}{7}$$

$$\begin{array}{r} 21x + 7 = 5x - 5 \\ - 5x \quad - 5x \\ \hline \end{array}$$

$$16x = -12$$

$$x = -12/16 = -3/4$$

$$4. \frac{x-6}{3} = \frac{-2x-2}{15}$$

$$\begin{array}{r} 15x - 90 = -6x - 6 \\ + 6x \quad + 6x \\ \hline \end{array}$$

$$21x = 84$$

$$x = 4$$

$$5. \frac{6}{3x-1} = \frac{3}{4}$$

$$9x - 3 = 24$$

$$9x = 27$$

$$x = 3$$

$$6. \frac{5}{x} = \frac{7}{x-4}$$

$$\begin{array}{r} 5x - 20 = 7x \\ - 5x \quad - 5x \\ \hline \end{array}$$

$$-20 = 2x$$

$$x = -10$$

$$7. \frac{12}{2-x} = \frac{15}{7+x}$$

$$\begin{array}{r} 84 + 12x = 30 - 15x \\ - 30 \quad - 30 \\ \hline \end{array}$$

$$54 + 12x = -15x$$

$$-12x \quad -12x$$

$$54 = -27x$$

$$x = -2$$

$$8. \frac{2}{4x+3} = \frac{x}{2x^2+12}$$

$$\begin{array}{r} 4x^2 + 24 = 4x^2 + 3x \\ 24 = 3x \\ \hline \end{array}$$

$$x = 8$$

$$9. \frac{9}{9x+4} = \frac{x}{x^2+6}$$

$$\begin{array}{r} 9x^2 + 54 = 9x^2 + 4x \\ 54 = 4x \\ \hline \end{array}$$

$$x = \frac{54}{4} = \frac{27}{2}$$

Fraction = Fraction \pm Fraction

Solve the rational equation.

$$10. \frac{1}{x+1} + \frac{x+5}{x+1} = \frac{5x+5}{x+1}$$

$$\begin{array}{r} x + 6 = 5x + 5 \\ - 5x \quad - 5x \\ \hline \end{array}$$

$$-4x + 6 = 5$$

$$-6 \quad -6$$

$$-4x = -1$$

$$x = \frac{1}{4}$$

$$11. \frac{5x+5}{x+4} + \frac{3x+2}{x+4} = \frac{4x+16}{x+4}$$

$$\begin{array}{r} 2x + 3 = 4x + 16 \\ - 4x \quad - 4x \\ \hline \end{array}$$

$$-2x + 3 = 16$$

$$-2x = 13$$

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

$$12. \frac{10x-8}{x^2-4} = \frac{4x+12}{x^2-4} + \frac{x}{x^2-4}$$

$$\begin{array}{r} 10x - 8 = 5x + 12 \\ - 5x \quad - 5x \\ \hline \end{array}$$

$$5x - 8 = 12$$

$$5x = 20$$

$$x = 4$$

$$13. \frac{12}{6x} + \frac{5x+25}{6x} = \frac{x}{6x}$$

$$-5x + 37 = x$$

$$37 = 6x$$

$$\frac{37}{6} = x$$

$$14. \frac{4x+8}{6x} = \frac{x-1}{6x} + \frac{6}{6x}$$

$$\begin{array}{r} 4x + 8 = x + 5 \\ - x \quad - x \\ \hline \end{array}$$

$$3x + 8 = 5$$

$$-8 \quad -8$$

$$3x = -3$$

$$x = -1$$

$$15. \frac{4x+4}{x^2-2x-3} = \frac{2x-6}{x^2-2x-3} + \frac{16}{x^2-2x-3}$$

$$\begin{array}{r} 4x + 4 = 2x + 10 \\ - 2x \quad - 2x \\ \hline \end{array}$$

$$2x + 4 = 10$$

$$2x = 6$$

$$x = 3$$