

$$16. \quad 1 - \frac{1-2x}{4x^2-6x} = \frac{2x}{2x-3} - \frac{1}{2x}$$

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

$$-2x = 4 \quad \quad \quad x = -2$$

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

$$c.a.: x \neq 0 \wedge x \neq \frac{3}{2}$$

$$17. \quad \frac{2}{x^2-1} + \frac{1}{x^2-x-2} = \frac{3}{x^2-3x+2}$$

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

$$\frac{2(x-2)+x-1-3(x+1)}{(x-1)(x+1)(x-2)} = 0$$

$$2x-4+x-1-3x-3 = 0$$

$$0x = 8 \quad \quad \quad imp.$$

$$c.a.: x \neq 2 \wedge x \neq \pm 1$$

$$18. \quad x^2 - \frac{9(x-3)}{4x-6} = \frac{2x^3}{2x-3} + \frac{6x^2-9x}{6-4x}$$

$$x^2 - \frac{9(x-3)}{2(2x-3)} = \frac{2x^3}{2x-3} + \frac{6x^2-9x}{-2(2x-3)}$$

$$x^2 - \frac{9(x-3)}{2(2x-3)} = \frac{2x^3}{2x-3} - \frac{6x^2-9x}{2(2x-3)}$$

$$\frac{2x^2(2x-3) - 9(x-3)}{2(2x-3)} = \frac{4x^3 - (6x^2 - 9x)}{2(2x-3)}$$

$$4x^3 - 6x^2 - 9x + 27 = 4x^3 - 6x^2 + 9x$$

$$-18x = -27 \quad \quad \quad x = \frac{3}{2} \text{ non acc. per c.a.} \Rightarrow imp.$$

$$c.a.: x \neq \frac{3}{2}$$

$$19. \quad \left( \frac{1}{x+4} - \frac{1}{5} \right) : \left( \frac{1}{x-4} + \frac{1}{3} \right) = 1$$

$$\frac{5-(x+4)}{5(x+4)} : \frac{3+x-4}{3(x-4)} = 1$$

$$\frac{5-x-4}{5(x+4)} \cdot \frac{3(x-4)}{x-1} = 1$$

$$\frac{-(x-1)}{5(x+4)} \cdot \frac{3(x-4)}{x-1} = 1$$

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

$$-3x+12=5x+20$$

$$\frac{1-x}{5(x+4)} \cdot \frac{3(x-4)}{x-1} = 1$$

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

$$c.a.: x \neq -4 \wedge x \neq 1$$

$$x = -1$$

$$20. \left( \frac{x}{12} - \frac{12}{x} \right) : \left( 1 + \frac{12}{x} \right) = \frac{x-12}{12}$$

$$\frac{x^2-144}{12x} : \frac{x+12}{x} = \frac{x-12}{12}$$

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

$$\frac{(x-12)(x+12)}{12x} \cdot \frac{x}{x+12} = \frac{x-12}{12}$$

$$c.a.: x \neq 0 \wedge x \neq -12$$

$$ind: x \neq 0 \wedge x \neq -12$$

$$21. \frac{1}{x} \left( \frac{1}{x-1} - 2 \right) + 2 \left( \frac{2}{x+1} - \frac{1}{x} \right) + \frac{4}{3x^2-3} = 0$$

$$\frac{1}{x} \cdot \frac{1-2(x-1)}{x-1} + 2 \cdot \frac{2x-(x+1)}{x(x+1)} + \frac{4}{3(x^2-1)} = 0$$

$$\frac{1-2x+2}{x(x-1)} + 2 \cdot \frac{2x-x-1}{x(x+1)} + \frac{4}{3(x-1)(x+1)} = 0$$

$$\frac{3-2x}{x(x-1)} + \frac{2x-2}{x(x+1)} + \frac{4}{3(x-1)(x+1)} = 0$$

$$\frac{3(3-2x)(x+1) + 6(x-1)^2 + 4x}{3x(x-1)(x+1)} = 0$$

$$c.a.: x \neq \pm 1 \wedge x \neq 0$$

$$9x+9-6x^2-6x+6x^2-12x+6+4x=0$$

$$-5x = -15$$

$$x = 3$$

$$22. \quad x \left( \frac{1}{x-2} + \frac{1}{1-x} \right) - (x-2) \left( \frac{1}{x-1} - \frac{1}{x} \right) = \frac{4}{x^2 - 2x}$$

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

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

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

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

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

$$c.a.: x \neq 1 \wedge x \neq 2 \wedge x \neq 0$$

$$ind: x \neq 1 \wedge x \neq 2 \wedge x \neq 0$$