

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

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

$$6y + \frac{12y}{6y-1} - 1 = (6y-1) + \frac{12y}{6y-1} = \frac{(6y-1)^2}{6y-1} + \frac{12y}{6y-1} = \frac{(6y-1)^2 + 12y}{6y-1} = \frac{(36y^2 - 12y + 1) + 12y}{6y-1} =$$

$$= \frac{36y^2 - 12y + 1 + 12y}{6y-1} = \frac{36y^2 + 1}{6y-1}$$

$$\frac{a}{3a-9b} - \frac{3b^2}{a^2-3ab} = \frac{a}{3(a-3b)} - \frac{3b^2}{a(a-3b)} = \frac{a^2}{3(a-3b)a} - \frac{3^2b^2}{a(a-3b)3} = \frac{a^2-3^2b^2}{3(a-3b)a} = \frac{a^2-9b^2}{3(a-3b)a} =$$

$$= \frac{(a+3b)(a-3b)}{3(a-3b)a} = \frac{a+3b}{3a}$$

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

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

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