

Ex 2.4.3

$$c) \quad \frac{6}{x^2-4} - \frac{3x}{x^2-4} = \frac{\overbrace{6-3x}^{-3x+6}}{x^2-4} = \frac{-3(\cancel{x-2})}{(x+2)(\cancel{x-2})} = \frac{-3}{x+2}$$

$$d) \quad \frac{2}{3x+1} + \frac{9}{(3x+1)^2} = \frac{2(3x+1)}{(3x+1)^2} + \frac{9}{(3x+1)^2} = \frac{6x+2+9}{(3x+1)^2} = \frac{6x+11}{(3x+1)^2}$$

ppmc: $(3x+1)^2$

$$e) \quad \frac{5}{a} - \frac{2a-1}{a^2} + \frac{a+5}{a^3} = \frac{5a^2}{a^3} - \frac{a(2a-1)}{a^3} + \frac{a+5}{a^3}$$

ppmc: a^3

$$= \frac{5a^2 - a(2a-1) + a+5}{a^3}$$

$$= \frac{5a^2 - 2a^2 + a + a + 5}{a^3}$$

$$= \frac{3a^2 + 2a + 5}{a^3}$$

$$f) \quad \frac{x}{x+1} + \frac{1}{x-1} - \frac{2x}{\underbrace{x^2-1}_{(x+1)(x-1)}} = \frac{x(x-1)}{(x+1)(x-1)} + \frac{(x+1)}{(x+1)(x-1)} - \frac{2x}{(x+1)(x-1)}$$

ppmc: $(x+1)(x-1)$

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

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

$$g) \quad \frac{x-3}{x+3} - \frac{2x}{\underbrace{x^2+5x+6}_{(x+3)(x+2)}} = \frac{(x-3)(x+2)}{(x+3)(x+2)} - \frac{2x}{(x+3)(x+2)}$$

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

$$= \frac{x^2-3x-6}{(x+3)(x+2)} \quad \Delta = 9+24 = 33$$

$$i) \quad \frac{2y+1}{\underbrace{y^2+4y+4}_{(y+2)^2}} - \frac{6y}{\underbrace{y^2-4}_{(y+2)(y-2)}} + \frac{3}{y-2} = \frac{(2y+1)(y-2) - 6y(y+2) + 3 \overbrace{(y+2)^2}^{y^2+4y+4}}{(y+2)^2(y-2)}$$

$$\text{ppmc} = (y+2)^2(y-2)$$

$$= \frac{2y^2+y-4y-2-6y^2-12y+3y^2+12y+12}{(y+2)^2(y-2)}$$

$$= \frac{-y^2-3y+10}{(y+2)^2(y-2)} = -(y^2+3y-10)$$

$$= \frac{-(y+5)\cancel{(y-2)}}{(y+2)^2\cancel{(y-2)}} = \frac{-(y+5)}{(y+2)^2}$$

$$j) \quad \frac{13-5x}{\underbrace{6x^2-6}_{6(x+1)(x-1)}} + \frac{3x}{x+1} - \frac{3x-5}{\underbrace{3x-3}_{3(x-1)}}$$

$$\text{ppmc} = 6(x+1)(x-1)$$

$$= \frac{13-5x + \overbrace{3x \cdot 6}^{18x}(x-1) - (3x-5) \cdot \overbrace{2}^{(2x+2)}(x+1)}{6(x+1)(x-1)}$$

$$= \frac{13-5x + 18x^2 - 18x - (6x^2 + 6x - 10x - 10)}{6(x+1)(x-1)}$$

$$= \frac{12x^2 - 19x + 23}{6(x+1)(x-1)}$$

$$\Delta = 19^2 - 4 \cdot 12 \cdot 23 = 1104$$