

## 2.3

Effectuer et réduire :

$$1) \frac{x}{x+3} + \frac{x+6}{x+3}$$

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

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

$$4) \frac{2}{3x+1} + \frac{9}{(3x+1)^2}$$

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

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

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

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

$$7) \frac{x-3}{x+3} - \frac{2x}{x^2+5x+6} = \frac{(x-3) \cdot (x+2)}{(x+3)(x+2)} - \frac{2x}{(x+3)(x+2)}$$

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

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

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

$$= \frac{x^2 - 3x - 6}{(x+3)(x+2)} \quad \Delta = 9 - 4 \cdot 1 \cdot (-6) = 33$$

$$8) \frac{1}{m} - \frac{m}{m^2 - 1} + \frac{2m + 1}{m - m^3} = \frac{1 \cdot (m+1)(m-1)}{m(m+1)(m-1)} - \frac{m \cdot m}{m(m+1)(m-1)} + \frac{2m+1}{m(m+1)(m-1)}$$

$\underbrace{m^2 - 1}_{(m+1)(m-1)}$   
 $\underbrace{m - m^3}_{m(1-m^2)}$   
 $m(1-m)(1+m) + (m-1)$

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

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

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

$$9) \frac{2y+1}{y^2+4y+4} - \frac{6y}{y^2-4} + \frac{3}{y-2} = \frac{(2y+1)(y-2)}{(y+2)^2(y-2)} - \frac{6y(y+2)}{(y+2)^2(y-2)} + \frac{3(y+2)^2}{(y+2)^2(y-2)}$$

$$\text{ppmc: } (y+2)^2(y-2) \left\{ = \frac{2y^2 - 4y + y - 2 - 6y^2 - 12y + 3y^2 + 12y + 12}{(y+2)^2(y-2)} \right.$$

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

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

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

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

$$10) \frac{13-5x}{\underbrace{6x^2-6}_{6(x+1)(x-1)}} + \frac{3x}{x+1} - \frac{3x-5}{\underbrace{3x-3}_{3(x-1)}} = \frac{13-5x + \overset{18x}{3x \cdot 6(x-1)} - 2(3x-5)(x+1)}{6(x+1)(x-1)}$$

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

$-6x^2 - 6x + 10x + 10$

...

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

$$\Delta = 19^2 - 4 \cdot 12 \cdot 23 = -743 < 0$$