

## 2.4.2 Effectuer et réduire :

$$i) \frac{\overset{\bullet}{5}u^2 + 12u + 4}{\underset{\bullet}{u^4} - 16} \cdot \frac{\overset{\bullet}{u^2} - 2u}{\underset{\bullet}{25}u^2 + 20u + 4} = \frac{\cancel{(5u+2)} \cancel{(u+2)}}{\cancel{(u-2)} \cancel{(u+2)} (u^2+4)} \cdot \frac{u \cancel{(u-2)}}{(5u+2)^{\cancel{2}1}} =$$

$$\bullet 5u^2 + 12u + 4 = (5u + 2)(u + 2)$$

$$\bullet u^2 - 2u = u(u - 2)$$

$$\bullet u^4 - 16 = (u^2 - 4)(u^2 + 4) = (u - 2)(u + 2)(u^2 + 4)$$

$$\bullet 25u^2 + 20u + 4 = (5u + 2)^2$$

$$= \frac{u}{(u^2 + 4) \cdot (5u + 2)}$$

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

$$= \frac{-3}{x+2}$$

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

$$\text{ppmc : } \begin{array}{l} 6x^2-6 = 6(x^2-1) = 6(x-1)(x+1) \\ \underline{x+1} \\ 3x-3 = 3(x-1) \end{array}$$

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

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

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

$$= \frac{18x^2 - 23x + 13 - 6x^2 + 4x + 10}{6(x-1)(x+1)}$$

$$= \frac{\underline{12x^2 - 19x + 23}}{6(x-1)(x+1)} \quad \Delta = 19^2 - 4 \cdot 12 \cdot 23 = -743 < 0 \text{ (pas factorisable)}$$

2.4.5 Effectuer et réduire :

$$b) \left[ \underbrace{\left( x + \frac{2x}{x-2} \right)}_{\textcircled{1}} \underbrace{\left( \frac{2x}{x-2} - 2 \right)}_{\textcircled{2}} \right] \div \underbrace{\frac{4x^2}{x^2-4}}_{\textcircled{3}} = \left( \frac{x^2}{x-2} \cdot \frac{4}{x-2} \right) \cdot \frac{(x-2)(x+2)}{4x^2} = *$$

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

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

$$\textcircled{3} \quad \frac{4x^2}{x^2-4} = \frac{4x^2}{(x-2)(x-2)}$$

$$* \quad \frac{\cancel{x^2} \cdot \cancel{4} \cdot \cancel{(x-2)}(x+2)}{(x-2)\cancel{(x-2)} \cdot \cancel{4}\cancel{x^2}} = \frac{x+2}{x-2}$$