

## Fractions algébriques - Simplifier si possible

Exercices avec mise en évidence et simples identités

Simplifier les fractions algébriques suivantes : (On admettra qu'aucun facteur n'est nul)

$$\frac{a^2 - b^2}{a^2 + 2ab + b^2}$$

$$\frac{a + b + c}{a^2 - (b + c)^2}$$

$$\frac{x^3 + 2x^2}{x^2 + 4x + 4}$$

$$\frac{x^2 - a^4}{x^2 - a^4}$$

$$\frac{x^2 - 2a^2x + a^4}{am^2 - a^3}$$

$$\frac{2am + 2a^2}{x^2 + 2xy + y^2}$$

$$\frac{ax + ay}{8a^2 - 8b^2}$$

$$\frac{a - b}{a^2 + 10a + 25}$$

$$\frac{a^2 - 5}{2x^3y - 32xy^3}$$

$$\frac{2x^2y - 8xy^2}{(2x + 5)^2 - (x + 4)(2x + 5)}$$

$$\frac{x^2 - 1}{1 + \frac{x}{y}}$$

$$\frac{y^2 - x^2}{a - m}$$

$$\frac{a - \frac{m^2}{a}}{x^5 - xy^4}$$

$$\frac{x^3 - xy^2}{x^3 - xy^2}$$

☞ [ici](#) les réponses

Réponses :

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

$$\frac{a + b + c}{a^2 - (b + c)^2} = \frac{a + b + c}{(a + b + c)(a - b - c)} = \frac{1}{a - b - c}$$

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

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

$$\frac{am^2 - a^3}{2am + 2a^2} = \frac{a(m^2 - a^2)}{2a(m + a)} = \frac{a(m + a)(m - a)}{2a(m + a)} = \frac{m - a}{2}$$

$$\frac{x^2 + 2xy + y^2}{ax + ay} = \frac{(x + y)^2}{a(x + y)} = \frac{x + y}{a}$$

$$\frac{8a^2 - 8b^2}{a - b} = \frac{8(a^2 - b^2)}{a - b} = \frac{8(a + b)(a - b)}{a - b} = 8(a + b)$$

$$\frac{a^2 + 10a + 25}{a^2 - 25} = \frac{(a + 5)^2}{(a + 5)(a - 5)} = \frac{a + 5}{a - 5}$$

$$\frac{2x^3y - 32xy^3}{2x^2y - 8xy^2} = \frac{2xy(x^2 - 16y^2)}{2xy(x - 4y)} = \frac{2xy(x + 4y)(x - 4y)}{2xy(x - 4y)} = x + 4y$$

$$\frac{(2x + 5)^2 - (x + 4)(2x + 5)}{x^2 - 1} = \frac{(2x + 5)(2x + 5 - x - 4)}{(x + 1)(x - 1)} = \frac{(2x + 5)(x + 1)}{(x + 1)(x - 1)} = \frac{2x + 5}{x - 1}$$

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

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

$$\frac{x^5 - xy^4}{x^3 - xy^2} = \frac{x(x^4 - y^4)}{x(x^2 - y^2)} = \frac{x(x^2 + y^2)(x^2 - y^2)}{x(x^2 - y^2)} = x^2 + y^2$$

 [Retour](#)