Fractions algébriques - Simplifier

d'après N.J. Schons - Éléments d'Algèbre La Procure Namur 10e édition 1986

Simplifier les fractions algébriques suivantes : (On admettra que cette simplification soit toujours possible)

$$\frac{14b^4x \cdot 5ay}{15a^2x \cdot 7b^3y}$$

$$\frac{axy - bxy}{ab - b^2}$$

$$\frac{a - 3}{2a^2 - 18}$$

$$\frac{9a^5 - 16a}{6a^2b^2 - 8b^2}$$

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

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

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

$$\frac{8a^3 + 1}{64a^6 - 1}$$

$$\frac{4a^2 + 12a + 9}{4a^2 - 9}$$

$$\frac{25x^2 + 20ax + 4a^2}{2(25ax^3 - 4a^3x)}$$

$$\frac{12ax^2 + 3ax}{8x^2 + 22x + 5}$$

$$\frac{3x^2 - x - 14}{3abx + 6ab}$$

$$\frac{x^2 - 7x - 8}{x^3 + 3x^2 + 2x}$$

$$\frac{x^2 - 2x - 3}{9 - x^2}$$

$$\frac{8x^2 + 22x - 6}{4x^2 + 27x - 7}$$

$$\frac{2x^2 - 9x + 7}{12x^2 - 21x + 9})$$

$$\frac{8x^6 + 27y^6}{8x^4 - 18y^4}$$

$$\frac{40x^3 - 5}{12x^2 + 6x + 3}$$

$$\frac{16x^2 - 54}{8x^2 - 24x + 18}$$

$$\frac{(a + b)^2(a^3b^3)}{(a^2 - b^2)^2}$$

$$\frac{a^6 - b^6}{(a + b)^2(a^3 - b^3)}$$

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

$$\frac{2x^3 + 5x^2 + 4x + 1}{x^3 + 3x^2 + 3x + 1}$$

$$\frac{x^3 - 9x^2 + 11x + 21}{x^4 - x^3 - 4x^2 - 5x - 3}$$

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

$$\frac{(a^2 + b^2 - c^2)^2 - (a^2 - b^2 + c^2)^2}{4ab^2 + 4abc}$$

☞ **ici** les réponses

☞ **ici** les réponses

Réponses :

$$\frac{14b^4x \cdot 5ay}{15a^2x \cdot 7b^3y} = \frac{2b}{3a}$$
$$\frac{axy - bxy}{ab - b^2} = \frac{xy}{b}$$
$$\frac{a-3}{2a^2-18} = \frac{1}{2(a+3)}$$
$$\frac{9a^5 - 16a}{6a^2b^2 - 8b^2} = \frac{a(3a^2+4)}{2b^2}$$
$$\frac{a^3+b^3}{(a-b)^2+ab} = a+b$$
$$\frac{4(x+y)^2}{3(x^2-y^2)} = \frac{4(x+y)}{3(x-y)}$$
$$\frac{x^2-4x+4}{x^2-4} = \frac{x-2}{x+2}$$
$$\frac{8a^3+1}{64a^6-1} = \frac{1}{8a^3-1}$$
$$\frac{4a^2+12a+9}{4a^2-9} = \frac{(2a+3)^2}{(2a+3)(2a-3)} = \frac{2a+3}{2a-3}$$
$$\frac{25x^2+20ax+4a^2}{2(25ax^3-4a^3x)} = \frac{(5x+2a)^2}{2ax(25x^2-4a^2)} = \frac{5x+2a}{2ax(5x-2a)}$$
$$\frac{12ax^2+3ax}{8x^2+22x+5} = \frac{3ax(4x+1)}{(4x+1)(2x+5)} = \frac{3ax}{2x+5}$$
$$\frac{3x^2-x-14}{3abx+6ab} = \frac{(x+2)(3x-7)}{3ab(x+2)} = \frac{3x-7}{3ab}$$
$$\frac{x^2-7x-8}{x^3+3x^2+2x} = \frac{(x+1)(x-8)}{x(x+1)(x+2)} = \frac{x-8}{x(x+2)}$$

☞ **Retour**

Réponses :

$$\frac{x^2-2x-3}{9-x^2}=\frac{(x+1)(x-3)}{(3+x)(3-x)}=-\frac{x+1}{x+3}$$
$$\frac{8x^2+22x-6}{4x^2+27x-7}=\frac{2(x+3)(4x-1)}{(4x-1)(x+7)}=\frac{2(x+3)}{x+7}$$
$$\frac{2x^2-9x+7}{12x^2-21x+9})=\frac{(x-1)(2x-7)}{3(x-1)(4x-3)}=\frac{2x-7}{3(4x-3)}$$
$$\frac{8x^6+27y^6}{8x^4-18y^4}=\frac{4x^4-6x^2y^2+9y^4}{2(2x^2-3y^2)}$$
$$\frac{40x^3-5}{12x^2+6x+3}=\frac{5(8x^3-1)}{3(4x^2+2x+1)}=\frac{5(2x-1)}{3}$$
$$\frac{16x^2-54}{8x^2-24x+18}=\frac{2(8x^3-27)}{2(2x-3)^2}=\frac{4x^2+6x+9}{2x-3}$$
$$\frac{(a+b)^2(a^3b^3)}{(a^2-b^2)^2}=\frac{(a+b)^2(a^3-b^3)}{(a+b)^2(a-b)^2}=\frac{a^2+ab+b^2}{a-b}$$
$$\frac{a^6-b^6}{(a+b)^2(a^3-b^3)}=\frac{a^3+b^3}{(a+b)^2}=\frac{^2-ab+b^2}{a+b}$$
$$\frac{x^3-x^2-4x+4}{x^2-3x+2}=\frac{(x-1)(x-2)(x+2)}{(x-1)(x-2)}=x+2$$
$$\frac{2x^3+5x^2+4x+1}{x^3+3x^2+3x+1}=\frac{(x+1)^2(2x+1)}{(x+1)^3}=\frac{2x+1}{x+1}$$
$$\frac{x^3-9x^2+11x+21}{x^4-x^3-4x^2-5x-3}=\frac{(x+1)(x-3)(x-7)}{(x+1)(x-3)(x^2+x+1)}=\frac{x-7}{x^2+x+1}$$
$$\frac{(a+b)^2-(c-b)^2}{(a-b)^2-(c+b)^2}=\frac{(a+c)(a+2b-c)}{(a+c)(a-2b-c)}=\frac{a+2b-c}{a-2b-c}$$
$$\frac{(a^2+b^2-c^2)^2-(a^2-b^2+c^2)^2}{4ab^2+4abc}=\frac{2a^2(2b^2-2c^2)}{4ab(b+c)}=\frac{a(b-c)}{b}$$

☞ **Retour**