

Fractions algébriques

Calculer et simplifier :

1. $\frac{x-3}{x+3} - \frac{x+3}{x-3}$

2. $\frac{2x-3a}{x-2a} - \frac{2x-a}{x-a}$

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

4. $\frac{2x^2}{x^2-y^2} - \frac{2x^2}{x^2+xy}$

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

6. $\frac{a+1}{x^2-a^2} + \frac{a-1}{(x-a)^2}$

7. $1 - \frac{a-b}{a+b}$

8. $1+x+x^2 + \frac{x^3}{1-x}$

9. $1-x+x^2 - \frac{x^3}{1+x}$

10. $1-2x+x^2 + \frac{1-x^4}{1+2x+x^2}$

11. $\frac{a^2+b^2}{a^2-b^2} + \frac{b}{a-b} - \frac{a}{a+b}$

12. $\frac{a+8}{a-1} + \frac{a+4}{a+1} - \frac{2(4a+1)}{a^2-1}$

13. $\frac{a}{2(a+b)} + \frac{2a^2}{3a^2-3b^2} - \frac{3b}{4a-4b}$

14. $\frac{a+5}{a-1} - \frac{6}{a^2+a+1} - \frac{6(a^2+2)}{a^3-1}$

15. $\frac{a^3-b^3}{a^2-b^2} - \frac{a^2b+ab^2}{a^2+ab}$

16. $\frac{a^2+ab}{a^2-ab} - \frac{a^3+2a^2b+ab^2}{a^2b-b^3}$

17. $\frac{3-2x}{2x+3} - \frac{2x+3}{3-2x} + \frac{36}{4x^2-9}$

$$18. \frac{ax^2 + b}{2x - 1} + \frac{2(bx + ax^2)}{1 - 4x^2} - \frac{ax^2 - b}{2x + 1}$$

$$19. \frac{\frac{1}{1+x} + \frac{x}{1-x}}{\frac{1}{1-x} - \frac{x}{1+x}}$$

$$20. \frac{1}{a - \frac{a^2 - 1}{a + \frac{1}{a-1}}}$$

$$21. \frac{\frac{x-y}{y-a} - \frac{y-a}{x-y}}{\frac{x-y-1}{x-y} - \frac{y-a-1}{y-a}}$$

$$22. \frac{a-x}{a^2 - ax - \frac{(a-x)^2}{1 - \frac{a}{x}}}$$

Solutions

1. $\frac{x-3}{x+3} - \frac{x+3}{x-3} \dots\dots\dots \frac{-12x}{(x+3)(x-3)}$
2. $\frac{2x-3a}{x-2a} - \frac{2x-a}{x-a} \dots\dots\dots \frac{a^2}{(x-a)(x-2a)}$
3. $\frac{x+a}{x-2a} - \frac{x^2+2a^2}{x^2-4a^2} \dots\dots\dots \frac{3ax}{(x-2a)(x+2a)}$
4. $\frac{2x^2}{x^2-y^2} - \frac{2x^2}{x^2+xy} \dots\dots\dots \frac{2xy}{(x+y)(x-y)}$
5. $\frac{x^2}{x-x^3} - \frac{x}{1+x^2} \dots\dots\dots \frac{2x^3}{(x-1)(x+1)(1+x^2)}$
6. $\frac{a+1}{x^2-a^2} + \frac{a-1}{(x-a)^2} \dots\dots\dots \frac{2a(x-1)}{(x+a)(x-a)^2}$
7. $1 - \frac{a-b}{a+b} \dots\dots\dots \frac{2b}{a+b}$
8. $1 + x + x^2 + \frac{x^3}{1-x} \dots\dots\dots - \frac{1}{x-1}$
9. $1 - x + x^2 - \frac{x^3}{1+x} \dots\dots\dots \frac{1}{x+1}$
10. $1 - 2x + x^2 + \frac{1-x^4}{1+2x+x^2} \dots\dots\dots \frac{-2(x-1)}{x+1}$
11. $\frac{a^2+b^2}{a^2-b^2} + \frac{b}{a-b} - \frac{a}{a+b} \dots\dots\dots \frac{2b}{a-b}$
12. $\frac{a+8}{a-1} + \frac{a+4}{a+1} - \frac{2(4a+1)}{a^2-1} \dots\dots\dots \frac{2(a+1)}{a-1}$
13. $\frac{a}{2(a+b)} + \frac{2a^2}{3a^2-3b^2} - \frac{3b}{4a-4b} \dots\dots\dots \frac{(7a+3b)(2a-3b)}{12(a+b)(a-b)}$
14. $\frac{a+5}{a-1} - \frac{6}{a^2+a+1} - \frac{6(a^2+2)}{a^3-1} \dots\dots\dots 1$
15. $\frac{a^3-b^3}{a^2-b^2} - \frac{a^2b+ab^2}{a^2+ab} \dots\dots\dots \frac{a^2}{a+b}$
16. $\frac{a^2+ab}{a^2-ab} - \frac{a^3+2a^2b+ab^2}{a^2b-b^3} \dots\dots\dots - \frac{a+b}{b}$
17. $\frac{3-2x}{2x+3} - \frac{2x+3}{3-2x} + \frac{36}{4x^2-9} \dots\dots\dots \frac{12}{-3+2x}$

$$18. \frac{ax^2 + b}{2x - 1} + \frac{2(bx + ax^2)}{1 - 4x^2} - \frac{ax^2 - b}{2x + 1} \dots\dots\dots \frac{2bx}{(2x + 1)(2x - 1)}$$

$$19. \frac{\frac{1}{1+x} + \frac{x}{1-x}}{\frac{1}{1-x} - \frac{x}{1+x}} \dots\dots\dots 1$$

$$20. \frac{1}{a - \frac{a^2 - 1}{a + \frac{1}{a-1}}} \dots\dots\dots \frac{a^2 - a + 1}{2a - 1}$$

$$21. \frac{\frac{x-y}{y-a} - \frac{y-a}{x-y}}{\frac{x-y-1}{x-y} - \frac{y-a-1}{y-a}} \dots\dots\dots x - a$$

$$22. \frac{a-x}{a^2 - ax - \frac{(a-x)^2}{1 - \frac{a}{x}}} \dots\dots\dots \frac{1}{x+a}$$