ESERCIZI IN PIÙ

LA POTENZA DI FRAZIONI ALGEBRICHE

Semplifica le seguenti espressioni.

1 $\left(a+\frac{a}{a+3}+\frac{4}{a+3}\right)\cdot\left[\left(\frac{2}{a+1}-1+a\right)^2:\left(\frac{2+3a+a^2}{a^2+2a-3}\right)^2\right]:\left(\frac{2}{a+1}+a-1\right)^2$ $\left[\frac{(a+3)(a-1)^2}{(a+1)^2}\right]$

2 $\left[\frac{1}{x+2y}-\frac{1}{x^2+4y^2+4xy}\left(x-\frac{12y^2-2x^2-2xy}{x-2y}\right)\right]\cdot\left(\frac{1}{2y-x}+\frac{6y-x}{x^2-4y^2}\right)^{-1}$ [1]

3 $\left(\frac{8a^2}{1+2a}-2a\right)\left(2a+\frac{1+4a-8a^3}{4a^2-1}\right)\left(\frac{2}{2a-1}+\frac{4}{2a+1}-2\right)^{-1}:\left(a-\frac{2a}{2a+1}\right)$ $\left[\frac{2a+1}{2a(3-2a)}\right]$

4 $\left(\frac{2x+y}{x-y}-\frac{x^2+5xy}{x^2-y^2}\right)^3:\frac{x^6+y^6-2x^3y^3}{x^3+3x^2y+3xy^2+y^3}+\frac{y-x}{(x^2+xy+y^2)^2}$ [0]

5 $\left[\left(x+\frac{1}{x+2}\right)^2-\left(x-\frac{1}{x+2}\right)^2\right]\cdot\left(\frac{2}{x^3}+\frac{1}{x^2}\right)$ $\left[\frac{4}{x^2}\right]$

6 $\left(\frac{a}{b}+\frac{4b}{a}+4\right)\cdot\left(\frac{a^3-2a^2b+4ab^2}{a^3-8b^3}:\frac{a^3+8b^3}{a^3+2a^2b+4ab^2}\right):\left(\frac{b}{a}\right)^{-1}$ $\left[\frac{a+2b}{a-2b}\right]$

7 $\left[\left(\frac{a+b}{a-b}\right)^3+3\left(\frac{a+b}{a-b}\right)^2+3\left(\frac{a+b}{a-b}\right)+1\right]:\left[\left(\frac{a-b}{a+b}\right)^3+1+3\left(\frac{a-b}{a+b}\right)^2+3\left(\frac{a-b}{a+b}\right)\right]$ $\left[\frac{(a+b)^3}{(a-b)^3}\right]$

8 $\left[\frac{2a^2+ab-3b^2}{a^2-ab-2b^2}:\left(\frac{2a^2+3ab}{3a^2-3ab-6b^2}\cdot\frac{a^2-2ab+b^2}{3a}\right)\right]^{-2}$ $\left[\frac{(a-b)^2}{81}\right]$

9 $\left\{\left[\left(\frac{1}{2b-1}\right)^{-3}-\frac{1}{2b-1}\right]:\frac{8b^2-8b}{2b-1}-b^2\right\}\cdot\left(1-\frac{b^2-2b}{b^2-2b+1}\right)$ [1]

10 $\left[\left(x-2-\frac{3x}{x+2}\right)\left(x+6-\frac{2x}{x+1}\right)+13\right]:\left\{\frac{2x^3}{1-x^2}:\left[\left(\frac{1+x}{1-x}-1\right)\left(1-\frac{1}{1+x}\right)\right]\right\}^3-\frac{1}{x^3(x+1)}$ $\left[\frac{1}{x+1}\right]$

11 $1-\left\{\left[\left(\frac{2y^3+y^2-2y-1}{1+y-2y^2}+3\right)^3-6y\left(y-\frac{1}{y}\right)\right]:\frac{12y-14+y^3}{y^3-1}\right\}$ $[y^3]$

12 $\left(\frac{2x}{x+y}+\frac{4y}{x-y}-\frac{4y^2}{x^2-y^2}\right):\left[\left(\frac{x+y}{2x+y}\right)^{-1}\cdot\frac{(2+x-2y)(x+y)}{x(2x+y)}\right]$ $\left[\frac{2x^2}{(x-y)(2+x-2y)}\right]$