

Löse so weit wie möglich und gib an, welche Zahlen die Variablen nicht annehmen dürfen!

1.  $\frac{1}{3a-4b} - \frac{2a-b}{9a^2-24ab+16b^2} - \frac{a-3b}{27a^2-48b^2} = \quad a, b \neq ?$
2.  $\left(\frac{2y}{2x+y} - \frac{y}{x}\right) : \frac{-2y^2}{4x^3-xy^2} = \quad x, y \neq ?$
3.  $\frac{4m^2+4m+1}{4-n^2} : \frac{4m+2}{3n-6} = \quad m, n \neq ?$
4.  $\frac{3x-1}{3x-6} - \frac{10x+3}{6x^2+12x} - \frac{3x^2+7}{3x^2-12} = \quad x \neq ?$
5.  $\left[\frac{2a-1}{(a+1)^2} - \frac{a}{a^2-1}\right] : \left[\frac{a^2-4a+1}{a-1} : (a+1)\right] =$
6.  $\left(\frac{7b-28}{4b^2-36} : \frac{3b^2-24b+48}{2b^2+12b+18}\right) \cdot \frac{6b-18}{7} = \quad b \neq ?; \text{ Probe für } b = 2$
7.  $\left(\frac{r^2}{3s^2} - \frac{1}{3}\right) \cdot \left(\frac{1}{r} - \frac{1}{r+s}\right) : \frac{3rs-3s^2}{15r^2} = \quad r, s \neq ?; \text{ Probe für } r = 2, s = 1$
8.  $\left(\frac{1}{3x-2y} - \frac{1}{3x}\right) : \frac{4y^2}{27x^3-12xy^2} - 1 = \quad x, y \neq ?$
9.  $\frac{\frac{2x^2}{4y^3-xy^2}}{\frac{x}{y} - \frac{2x}{2y+x}} =$
10.  $\frac{\frac{y}{y-1} - \frac{y}{y-1}}{\frac{y-1}{y}} =$
11.  $\frac{\frac{1}{y+1} + \frac{y}{y-1}}{\frac{y}{y-1}} =$
12.  $\frac{\frac{3}{\frac{y+2}{y-2}} - \frac{y-2}{\frac{y}{y+2}}}{\frac{y-2}{4}} =$
13.  $\frac{\frac{y}{\frac{1-y}{y-1}} + \frac{y}{\frac{y-1}{1-y}}}{\frac{y}{y+1}} =$
14.  $\frac{\frac{5r}{3s} - \frac{3s}{5r}}{5r-6s + \frac{9s^2}{5r}} =$
15.  $\frac{r}{2} \cdot \frac{\frac{r-2}{r+2} - 1}{\frac{r+2}{r-2} + 1} =$
16.  $\frac{\frac{r}{s-2r} - \frac{r}{s}}{\frac{4r^2}{s^3-4r^2s}} - r =$
17.  $\frac{\frac{5r}{s} - \frac{10r}{5r+2s}}{\frac{50r^2}{4s^3-25r^2s}} - s =$

### LÖSUNGEN:

1.  $\frac{2(3a^2-ab-24b^2)}{3(3a-4b)^2(3a+4b)} \quad a \neq \pm \frac{4}{3}b$
2.  $\frac{2x-y}{2} \quad x, y \neq 0, y \neq \pm 2x$
3.  $-\frac{3(2m+1)}{2(n+2)} \quad m \neq -\frac{1}{2}, n \neq \pm 2$
4.  $\frac{-x+6}{6x(x^2-4)} \quad x \neq 0, x \neq \pm 2$
5.  $\frac{1}{a+1}$
6.  $\frac{b+3}{b-4} \quad b \neq \pm 3, b \neq 4, \text{ Pr.: } -\frac{5}{2}$
7.  $\frac{5r}{3s^2} \quad r, s \neq 0, r \neq \pm s; \text{ Pr.: } \frac{10}{3}$
8.  $\frac{3x}{2y}$
9.  $\frac{2}{2y-x}$
10.  $\frac{y}{(y-1)^2}$
11.  $\frac{y^4+2y^3+2y^2-2y+1}{y(y^2-1)}$
12.  $\frac{-5y^2-6y+32}{2y(y+2)^2}$
13.  $\frac{-2y^2+y-1}{(y-1)^2}$
14.  $\frac{5r+3s}{3s(5r-3s)}$
15.  $\frac{2-r}{r+2}$
16.  $\frac{s}{2}$
17.  $-\frac{5r}{2}$