

Lösungen für die Woche vom 4. - 8.10.2004

Domino: Erweitern und Kürzen von Bruchtermen

$$\frac{3x+4y}{2} = \frac{9x^2-16y^2}{6x-8y} = \frac{(3x+4y)(3x-4y)}{2(3x-4y)}$$

$$\frac{4x-9y}{3xy} = \frac{20x^2-45xy}{15x^2y} = \frac{5x(4x-9y)}{3xy \cdot 5x}$$

$$\frac{6x+7y}{6x-7y} = \frac{36x^2-49y^2}{36x^2+49y^2-84xy} = \frac{(6x+7y)(6x-7y)}{(6x-7y)^2}$$

$$\frac{x+2}{x-5} = \frac{x^2+7x+10}{x^2-25} = \frac{(x+2)(x+5)}{(x-5)(x+5)}$$

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

$$-\frac{1}{4} = \frac{y-x}{4x-4y} = \frac{-(x-y)}{4(x-y)}$$

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

$$\frac{11y-8x}{8x+11y} = \frac{64x^2-176xy+121y^2}{121y^2-64x^2} = \frac{(8x-11y)^2}{-(8x-11y)(8x+11y)}$$

$$\frac{x}{y} = \frac{2x-7x+3x}{4y-5y-7y} = \frac{x(2-7-3)}{y(4-5-7)}$$

$$\frac{1}{x+6} = \frac{x-3}{x^2+3x-18} = \frac{x-3}{(x+6)(x-3)}$$

$$\frac{b+d}{2(a+d)} = \frac{3bu+3du-5bv-5dv}{6au-10av+6du-10dv} = \frac{(3u-5v)(b+d)}{2(3u-5v)(a+d)}$$

$$\frac{x-y+z}{x+y+z} = \frac{x^2-2xy+y^2-z^2}{x^2-y^2-2yz-z^2} = \frac{(x-y)^2-z^2}{x^2-(y+z)^2} = \frac{(x-y-z)(x-y+z)}{(x-y-z)(x+y+z)}$$

Zusatzaufgaben S.11

$$11d) \frac{4au+4bu-4av-4bv}{8au-8bu-8av+8bv} = \frac{4[u(a+b)-v(a+b)]}{8[u(a-b)-v(a-b)]} = \frac{(a+b)(u-v)}{2(a-b)(u-v)} = \frac{a+b}{2(a-b)} = \frac{a+b}{2a-2b}$$

$$12d) \frac{4u-u^3}{3u-6} = \frac{u(4-u^2)}{3(u-2)} = \frac{u(2+u)(2-u)}{-3(2-u)} = \frac{u(2+u)}{-3}; \text{ID} = \mathbb{Q} \setminus \{2\}$$

$$13d) \frac{b^2-a^2}{a^4-b^4} = \frac{-(a^2-b^2)}{(a^2+b^2)(a^2-b^2)} = -\frac{1}{a^2+b^2}$$

$$14d) \frac{y^5-4y^4+4y^3}{y^4-4y^2} = \frac{y^3(y^2-4y+4)}{y^2(y^2-4)} = \frac{y(y-2)^2}{(y-2)(y+2)} = \frac{y(y-2)}{y+2} = \frac{y^2-2y}{y+2}$$