

DIE AUFGABEN

Bestimmen Sie zuerst den gemeinsamen Nenner! (aufschreiben!)

$$1 \quad 4a - \frac{4a^2 + 5}{a-1} =$$

$$2 \quad \frac{17a-15}{39} - \frac{8a+9}{26} =$$

$$3 \quad \frac{5c}{6a^3} + \frac{c}{3a^2} =$$

$$4 \quad 5a - 1 + \frac{3}{a} =$$

$$5 \quad \frac{5a+3b}{c} - 3a - b =$$

$$6 \quad \frac{1}{a} + \frac{1}{a^2} + \frac{1}{a^3} =$$

$$7 \quad 1 - \frac{c-d}{c+d} =$$

$$8 \quad \frac{8}{m} - \frac{11}{n} + \frac{6}{p} =$$

$$9 \quad \frac{5}{2ac} + \frac{3}{5cd} =$$

$$10 \quad \frac{5b^2}{8} + \frac{3b^2}{6} =$$

$$11 \quad \frac{2a-3b}{24} - \frac{5a+b}{32} - \frac{9a-4b}{40} - \frac{b}{80} =$$

$$12 \quad \frac{3a-c}{12ac} - \frac{5a-b}{10ab} - \frac{7b-c}{15bc} + \frac{4ac-3ab}{30abc} =$$

DIE LÖSUNGEN

$$1 \quad 4a - \frac{4a^2 + 5}{a-1} = \frac{4a(a-1)}{a-1} - \frac{4a^2 + 5}{a-1} = \frac{4a^2 - 4a - 4a^2 - 5}{a-1} = -\frac{4a+5}{a-1}$$

$$2 \quad \frac{17a-15}{39} - \frac{8a+9}{26} = \frac{17a-15}{3 \cdot 13} - \frac{8a+9}{2 \cdot 13} = \frac{2(17a-15)}{2 \cdot 3 \cdot 13} - \frac{3(8a+9)}{2 \cdot 3 \cdot 13} = \frac{34a-30-24a-27}{6 \cdot 13} = \frac{10a-57}{78}$$

Rechnen Sie: $(-3)(8a+9)$

$$3 \quad \frac{5c}{6a^3} + \frac{c}{3a^2} = \frac{5c}{6a^3} + \frac{c \cdot 2a}{3a^2 \cdot 2a} = \frac{5c+2ac}{6a^3}$$

$$4 \quad 5a-1 + \frac{3}{a} = \frac{a(5a-1)}{a} + \frac{3}{a} = \frac{5a^2 - a + 3}{a}$$

$$5 \quad \frac{5a+3b}{c} - 3a - b = \frac{5a+3b}{c} - \frac{3a \cdot c}{c} - \frac{b \cdot c}{c} = \frac{5a+3b-3ac-bc}{c}$$

$$6 \quad \frac{1}{a} + \frac{1}{a^2} + \frac{1}{a^3} = \frac{a^2}{a \cdot a^2} + \frac{a}{a^2 \cdot a} + \frac{1}{a^3} = \frac{a^2 + a + 1}{a^3}$$

$$7 \quad 1 - \frac{c-d}{c+d} = \frac{c+d}{c+d} - \frac{c-d}{c+d} = \frac{c+d-(c-d)}{c+d} = \frac{c+d-c+d}{c+d} = \frac{2d}{c+d}$$

$$8 \quad \frac{8}{m} - \frac{11}{n} + \frac{6}{p} = \frac{8np}{mnp} - \frac{11mp}{mnp} + \frac{6mn}{mnp} = \frac{8np - 11mp + 6mn}{mnp}$$

$$9 \quad \frac{5}{2ac} + \frac{3}{5cd} = \frac{5 \cdot 5d}{2ac \cdot 5d} + \frac{3 \cdot 2a}{5cd \cdot 2a} = \frac{25d+6a}{10acd}$$

$$10 \quad \frac{5b^2}{8} + \frac{3b^2}{6} = \frac{5b^2}{2 \cdot 4} + \frac{3b^2}{2 \cdot 3} = \frac{5b^2 \cdot 3}{2 \cdot 4 \cdot 3} + \frac{3b^2 \cdot 4}{2 \cdot 3 \cdot 4} = \frac{15b^2 + 12b^2}{24} = \frac{27b^2}{24} = \frac{9b^2}{8}$$

oder: den 2. Bruch zuerst kürzen!

$$11 \quad \frac{2a-3b}{24} - \frac{5a+b}{32} - \frac{9a-4b}{40} - \frac{b}{80} = \frac{20(2a-3b) - 15(5a+b) - 12(9a-4b) - 6b}{480} \\ = \frac{40a - 60b - 75a - 15b - 108a + 48b - 6b}{480} = \frac{-143a - 33b}{480}$$

$$12 \quad \frac{3a-c}{12ac} - \frac{5a-b}{10ab} - \frac{7b-c}{15bc} + \frac{4ac-3ab}{30abc} = \frac{5b(3a-c) - 6c(5a-b) - 4a(7b-c) + 2(4ac-3ab)}{60abc} \\ = \frac{15ab - 5bc - 30ac + 6bc - 28ab + 4ac + 8ac - 6ab}{60abc} \\ = \frac{-19ab + bc - 18ac}{60abc}$$