Lösungen:

1	Bitte berechnen Sie

a) $(-4i - 1)(-9i + 7)(-7i + 12)$ | L: $-252i^3 + 565i^2 - 179i - 84$
b) $(6j - 7)(2f - 3n)$ | L: $12fj - 18jn - 14f + 21n$
c) $(-m - 5)(5h - 13n)(-3z + 8m)$ | L: $15hmz - 40hm^2 - 39mnz + 104m^2n + 75hz - 200hm - 195nz + 520mn$
d) $(-3j - 2r)(8e - 1)$ | L: $-24ej + 3j - 16er + 2r$
e) $(4t - 5)(2b - 7m)$ | L: $8bt - 28mt - 10b + 35m$
f) $(-14{,}6p + 13{,}7x)(9{,}2s + 1{,}2)$ | L: $-134{,}32ps - 17{,}52p + 126{,}04sx + 16{,}44x$
g) $(-4{,}3i - 12{,}8)(4{,}1i - 14{,}5)$ | L: $-17{,}63i^2 + 9{,}87i + 185{,}6$
h) $(-2{,}4i + 4{,}4)(4{,}2i + 5{,}1)$ | L: $-10{,}08i^2 + 6{,}24i + 22{,}44$
i) $(14{,}1e - 12{,}8)(6{,}7e - 2{,}4)$ | L: $94{,}47e^2 - 119{,}6e + 30{,}72$
j) $(4{,}5r - 14{,}8t)(-9{,}5r - 8)$ | L: $-42{,}75r^2 - 36r + 140{,}6rt + 118{,}4t$

2	Bitte berechnen Sie

a)

$$\frac{\left(\frac{-2}{5} + \frac{9}{8}\right) * \frac{-1}{-3}}{\left(\frac{5}{-6} + \frac{-1}{-9}\right) * \frac{9}{5}} \qquad \text{L:} \qquad \frac{-29}{156}$$

b)

$$\frac{\left(-\frac{-5}{4} - \frac{1}{4}\right) * \left(\frac{1}{-6} - \frac{-2}{5}\right)}{\left(-\frac{-9}{8} + \frac{1}{-2}\right) * \left(-\frac{1}{-6} + \frac{3}{4}\right)} \qquad \text{L:} \qquad \frac{-168}{275}$$

c)

$$\frac{\frac{-4}{5} * \frac{-10}{7} * \frac{-9}{7} * \frac{-10}{-7}}{\frac{3}{5} * \frac{9}{-5} * \frac{-8}{-7} * \frac{-3}{7}} \qquad \text{L:} \qquad \frac{-250}{63}$$

d)

$$\frac{\left(-\frac{1}{7} - \frac{7}{5} + \frac{-8}{7}\right) * \frac{3}{-2}}{\left(-\frac{-1}{3} + \frac{-5}{3} - \frac{5}{4}\right) * \frac{4}{5}} \qquad \text{L:} \qquad \frac{-141}{91}$$

e)

$$\frac{\left(\frac{-2}{3} - \frac{5}{4} - \frac{-4}{9}\right) * \left(\frac{9}{10} - \frac{6}{7} - \frac{1}{2}\right)}{\left(\frac{-1}{4} + \frac{-5}{-4} - \frac{5}{2}\right) * \left(-\frac{7}{-5} - \frac{-8}{3} - \frac{-2}{-3}\right)} \qquad \text{L:} \qquad \frac{-40}{189}$$

3	Bitte berechnen Sie

a)

$$\frac{9t + 5}{a - 1} + \frac{b - 6r}{z + v}$$

$$\text{L:} \quad \frac{9t + 5}{a - 1} + \frac{b - 6r}{z + v} = \frac{9tz + 9tv + 5z + 5v + ab - 6ar - b + 6r}{az + av - z - v}$$

b)

$$\frac{13k - 15}{k + 1} - \frac{-6t - a}{15j + 8}$$

$$\text{L:} \quad \frac{13k - 15}{k + 1} - \frac{-6t - a}{15j + 8} = \frac{195jk + 104k - 225j - 120 + 6kt + ak + 6t + a}{15jk + 8k + 15j + 8}$$