Lösungen:

1	Bitte finden Sie die quadratische Ergänzung und nennen Sie die ganze binomische Formel
	a) $36q^2 + 12dq$ \quad | L: \quad $36q^2 + 12dq + d^2 = (6q + d)^2$
	b) $121r^2 - 198r$ \quad | L: \quad $121r^2 - 198r + 81 = (11r - 9)^2$
	c) $x^2 + px$ \quad | L: \quad $x^2 + px + 0{,}25p^2 = (x + 0{,}5p)^2$;
	d) $100u^2 + 140fu$ \quad | L: \quad $100u^2 + 140fu + 49f^2 = (10u + 7f)^2$
	e) $16z^2 - 40z$ \quad | L: \quad $16z^2 - 40z + 25 = (4z - 5)^2$
2	Bitte kürzen Sie soweit wie möglich
	a) $\dfrac{-55e^2j^2-10e^2m-50b^2e^2}{-10e^2j-45e^2v^2+15e^2}$ \qquad L: \quad $\dfrac{-55e^2j^2-10e^2m-50b^2e^2}{-10e^2j-45e^2v^2+15e^2} = \dfrac{-11j^2-2m-10b^2}{-2j-9v^2+3}$ \quad $[5e^2]$
	b) $\dfrac{33bc^2-3c^2g^2-30c^2d^2}{36c^2u-21c^3-3c^2}$ \qquad L: \quad $\dfrac{33bc^2-3c^2g^2-30c^2d^2}{36c^2u-21c^3-3c^2} = \dfrac{11b-g^2-10d^2}{12u-7c-1}$ \quad $[3c^2]$
	c) $\dfrac{45o^2r^2+18c^2r^2-90qr^2}{45r^2w^2-18c^2r^2-90r^2y}$ \qquad L: \quad $\dfrac{45o^2r^2+18c^2r^2-90qr^2}{45r^2w^2-18c^2r^2-90r^2y} = \dfrac{5o^2+2c^2-10q}{5w^2-2c^2-10y}$ \quad $[9r^2]$
	d) $\dfrac{3g^2j^2+6g^2j-12g^2v^2}{-3g^2x-30g^2}$ \qquad L: \quad $\dfrac{3g^2j^2+6g^2j-12g^2v^2}{-3g^2x-30g^2} = \dfrac{j^2+2j-4v^2}{-x-10}$ \quad $[3g^2]$
3	Bitte berechnen Sie
	a) $\dfrac{(\frac{7}{10}-\frac{3}{2}+\frac{-5}{9})*(-\frac{3}{10}+\frac{8}{-7}+\frac{-3}{10})}{(\frac{2}{-3}-\frac{8}{3}+\frac{-4}{5})*(-\frac{3}{-2}+\frac{-5}{6}-\frac{-4}{5})}$ \qquad | \quad L: \qquad $\dfrac{3721}{9982}$
	b) $\dfrac{\frac{3}{-10}*\frac{-1}{3}*\frac{5}{6}*\frac{9}{-2}}{\frac{-3}{10}*\frac{5}{-4}*\frac{-9}{-2}*\frac{5}{-2}}$ \qquad | \quad L: \qquad $\dfrac{4}{45}$
	c) $\dfrac{(-\frac{3}{4}+\frac{-3}{10})*(-\frac{5}{4}-\frac{5}{-9})}{(-\frac{9}{-8}+\frac{-1}{-10})*(-\frac{-9}{-10}+\frac{-3}{-10})}$ \qquad | \quad L: \qquad $\dfrac{875}{738}$
	d) $\dfrac{(\frac{8}{-5}-\frac{1}{6})*(-\frac{-1}{10}-\frac{-10}{7})}{(-\frac{-5}{-9}-\frac{4}{-9})*(-\frac{2}{-9}+\frac{-1}{-9})}$ \qquad | \quad L: \qquad $\dfrac{51039}{700}$

4	Bitte berechnen Sie

a)

$$\frac{11q + 6r^2u^2 + 2b}{9e^2j + 2sv + 11jx} + \frac{9h^2 + 5x}{5p + e^2}$$

L :

$$\frac{55pq + 11e^2q + 30pr^2u^2 + 6e^2r^2u^2 + 10bp + 2be^2 + 81e^2h^2j + 45e^2jx + 18h^2sv + 10svx + 99h^2jx + 55jx^2}{45e^2jp + 9e^4j + 10psv + 2e^2sv + 55jpx + 11e^2jx}$$

b)

$$\frac{4c^2 + 3ac^2 - 4d^2}{-a^2 - 3b^2c} + \frac{-11cd - 12a}{5a^2 + b^2c}$$

L :

$$\frac{20a^2c^2 + 4b^2c^3 + 15a^3c^2 + 3ab^2c^3 - 20a^2d^2 - 4b^2cd^2 + 11a^2cd + 12a^3 + 33b^2c^2d + 36ab^2c}{-5a^4 - 16a^2b^2c - 3b^4c^2}$$

c)

$$\frac{4v + x - 2u^2v}{u + ux^2} - \frac{2vx^2 + 11u}{x^2 + u^2v}$$

L :

$$\frac{4vx^2 + 4u^2v^2 + x^3 + u^2vx - 2u^2vx^2 - 2u^4v^2 - 2uvx^2 - 11u^2 - 2uvx^4 - 11u^2x^2}{ux^2 + u^3v + ux^4 + u^3vx^2}$$

5	Bitte bringen Sie's in die Form $(\square + \square)(\square + \square)$

a)	$18rw + 99w^2 + 10dr + 55dw$	L:	$(9w + 5d)(2r + 11w)$
b)	$-12hz - 36gz - 5hv - 15gv$	L:	$(-12z - 5v)(h + 3g)$
c)	$110n^2 + 31n - 99$	L:	$(10n + 11)(11n - 9)$
d)	$-72nt + 84nr - 42st + 49rs$	L:	$(12n + 7s)(-6t + 7r)$
e)	$22fs + 3f^2 + 24s^2$	L:	$(f + 6s)(4s + 3f)$