1. Vereinfache so weit wie möglich:

a) $\frac{a(x+y)}{4b^2} \cdot \frac{10b}{a^2x+a^2y} = \frac{10ab(x+y)}{4a^2b^2(x+y)} = \underline{\underline{\frac{5}{2ab}}}$

b) $\frac{(u+v)^2}{2(u-v)} \cdot \frac{4u-4v}{u^2+v^2} = \frac{(u+v)(u+v) \cdot 4(u-v)}{2(u-v)(u^2+v^2)} = \underline{\underline{\frac{2(u+v)(u+v)}{(u^2+v^2)}}}$

c) $\frac{6xy}{7z^2} : \frac{9y^3}{35xz^2} = \frac{6xy \cdot 35xz^2}{7z^2 \cdot 9y^3} = \underline{\underline{\frac{10x^2}{3y^2}}}$

d) $\frac{5x}{7x+7y} \cdot (x^2+2xy+y^2) = \frac{5x(x+y)(x+y)}{7(x+y)} = \underline{\underline{\frac{5x(x+y)}{7}}}$

e) $9(u-v)^2 : \frac{u-v}{4u+4v} = \frac{9(u-v)(u-v) \cdot 4(u+v)}{(u-v)} = \underline{\underline{36(u-v)(u+v)}}$

f) $\frac{14ab^2}{5a-5b} \cdot \frac{15(b-a)}{7a^2b^2} = \frac{14ab^2 \cdot (-15)(a-b)}{5(a-b) \cdot 7a^2b^2} = \underline{\underline{-\frac{6}{a}}}$

g) $\frac{16a^2b}{a^2-b^2} : \frac{24ab^2}{b+a} = \frac{16a^2b(a+b)}{(a+b)(a-b) \cdot 24ab^2} = \underline{\underline{\frac{2a}{3b(a-b)}}}$

h) $\frac{a^2(a^2-4)}{a^2+2a} : (a^2-2a) = \frac{a^2(a+2)(a-2)}{a(a+2) \cdot a(a-2)} = \underline{\underline{1}}$

i) $\frac{m^2n+2mn^2+n^3}{m^2} \cdot \frac{n^2}{m^2+mn} = \frac{n(m^2+2mn+n^2) \cdot n^2}{m^2 \cdot m(m+n)} = \frac{n^3(m+n)(m+n)}{m^3(m+n)} = \underline{\underline{\frac{n^3(m+n)}{m^3}}}$

j) $\frac{x^5-20x^3+64x}{(x^2-6x+8)(x^3+5x^2+6x)} = \frac{x(x^4-20x^2+64)}{(x-4)(x-2) \cdot x(x^2+5x+6)} = \frac{x(x^2-4)(x^2-16)}{x(x-4)(x-2)(x+2)(x+3)} =$

$\frac{x(x+2)(x-2)(x+4)(x-4)}{x(x-4)(x-2)(x+2)(x+3)} = \underline{\underline{\frac{(x+4)}{(x+3)}}}$