Termumformungen – Lösung

a) $\left(\sqrt{xy}-3\right)\left(\sqrt{xy}+3\right)-2xy = xy-9-2xy = -xy-9$

b) $\frac{2}{3}\left(n-\sqrt{3a}\right)\left(\sqrt{3a}+n\right) = \frac{2}{3}\left(n-\sqrt{3a}\right)\left(n+\sqrt{3a}\right) = \frac{2}{3}\left(n^2-3a\right) = \frac{2}{3}n^2-2a$

c) $\frac{\left(5\sqrt{c}-2\right)^2}{2-5\sqrt{c}} = \frac{\left(5\sqrt{c}-2\right)^2}{-\left(5\sqrt{c}-2\right)} = -\left(5\sqrt{c}-2\right) = 2-5\sqrt{c}$

d) $\frac{16-8k+k^2}{4-k} = \frac{(4-k)^2}{4-k} = 4-k$

e) $\frac{27-3b}{81-18b^2+b^2} = \frac{3(9-b)}{(9-b)^2} = \frac{3}{9-b}$

f) $\frac{49x^4-4y^2}{2y-7x^2} = \frac{(7x^2-2y)(7x^2+2y)}{2y-7x^2} = \frac{(7x^2-2y)(7x^2+2y)}{-(7x^2-2y)} = -(7x^2+2y) = -7x^2-2y$

g) $\frac{y-4a^2}{\sqrt{y}-2a} = \frac{(\sqrt{y}-2a)(\sqrt{y}+2a)}{\sqrt{y}-2a} = \sqrt{y}+2a$

h) $\frac{a-2\sqrt{ah}+h}{\sqrt{a}-\sqrt{h}} = \frac{(\sqrt{a}-\sqrt{h})^2}{\sqrt{a}-\sqrt{h}} = \sqrt{a}-\sqrt{h}$

i) $\frac{7z+56\sqrt{z}+112}{4+\sqrt{z}} = \frac{7(z+8\sqrt{z}+16)}{4+\sqrt{z}} = \frac{7(\sqrt{z}+4)^2}{4+\sqrt{z}} = 7\left(\sqrt{z}+4\right) = 7\sqrt{z}+28$

j) $\frac{5x-10\sqrt{xy}+5y}{10\sqrt{x}-10\sqrt{y}} = \frac{5(x-2\sqrt{xy}+y)}{10(\sqrt{x}-\sqrt{y})} = \frac{5(\sqrt{x}-\sqrt{y})^2}{10(\sqrt{x}-\sqrt{y})} = \frac{\sqrt{x}-\sqrt{y}}{2}$

k) $\frac{4p^4r-9q^6r}{2p^2r^2-3q^3r^2} = \frac{r(4p^4-9q^6)}{r^2(2p^2-3q^3)} = \frac{(2p^2-3q^3)(2p^2+3q^3)}{r(2p^2-3q^3)} = \frac{2p^2+3q^3}{r}$

l) $\frac{81\sqrt{2a}-9y^2\sqrt{2a}}{2\sqrt{2a}(4,5+9y+0,5y^2)} = \frac{9\sqrt{2a}(9-y^2)}{\sqrt{2a}(9+18y+y^2)} = \frac{9(3-y)(3+y)}{(3+y)^2} = \frac{9(3-y)}{(3+y}$

m) $\frac{12ax-12\sqrt{a}bx+3b^2x}{24ax^2-6x^2b^2} = \frac{3x(4a-4\sqrt{a}b+b^2)}{6x^2(4a-b^2)} = \frac{(2\sqrt{a}-b)^2}{2x(2\sqrt{a}-b)(2\sqrt{a}+b)} = \frac{(2\sqrt{a}-b)}{2x(2\sqrt{a}+b)}$

n) $\frac{9a^2\sqrt{x}-0,25y\sqrt{x}}{9a^2\sqrt{x^3}-3a\sqrt{x^3y}+0,25y^2\sqrt{x^3}} = \frac{\sqrt{x}(9a^2-0,25y)}{\sqrt{x^3}(9a^2-3a\sqrt{y}+0,25y^2)} = \frac{(3a-0,5\sqrt{y})(3a+0,5\sqrt{y})}{x(3a-0,5\sqrt{y})^2} =$

$= \frac{(3a+0,5\sqrt{y})}{x(3a-0,5\sqrt{y})}$

o) $\frac{4a^3z^2-8a^2z^3}{2a^3z-4\sqrt{2az}a^2z+4a^2z^2} = \frac{4a^2z^2(a-2z)}{2a^2z(a-2\sqrt{2az}+2z)} = \frac{2z(\sqrt{a}-\sqrt{2z})(\sqrt{a}+\sqrt{2z})}{(\sqrt{a}-\sqrt{2z})^2} = \frac{2z(\sqrt{a}+\sqrt{2z})}{(\sqrt{a}-\sqrt{2z})}$