Aufgabe 5.1

(a) $\left(2^3\right)^2 = 2^6 = 64$

(b) $2^{(3^2)} = 2^9 = 512$

Aufgabe 5.2

(a) $\left((-10)^3\right)^4 = (-10)^{12} = 10^{12}$

(b) $\left((-10)^4\right)^3 = (-10)^{12} = 10^{12}$

Aufgabe 5.3

(a) $2^{3^2} = 2^9 = 512$

(b) $(-10)^{3^4} = (-10)^{81} = -10^{81}$

Aufgabe 5.4

(a) $\left((-1)^{25}\right)^{36} = (-1)^{36} = 1$

(b) $\left((\sqrt{2})^5\right)^4 = \left((\sqrt{2})^4\right)^5 = \left(2^2\right)^5 = 2^{10} = 1024$

Aufgabe 5.5

(a) $(-z^5)^6 = z^{30}$

(b) $(-z^6)^5 = -z^{30}$

Aufgabe 5.6

(a) $\left(p^3\right)^{2m-1} = p^{3(2m-1)} = p^{6m-3}$

(b) $\left(c^{a+1}\right)^b = c^{(a+1)b} = c^{ab+b}$

Aufgabe 5.7

(a) $\left(x^{n+1}\right)^3 = x^{3(n+1)} = x^{3n+3}$

(b) $\left(x^{k+2}\right)^{k-2} = x^{(k+2)(k-2)} = x^{k^2-4}$