

**Aufgabe 10.1**

(a)  $3^{-4} = \frac{1}{3^4} = \frac{1}{81}$

(b)  $2^{-5} = \frac{1}{2^5} = \frac{1}{32}$

**Aufgabe 10.2**

(a)  $3^{-3} = \frac{1}{3^3} = \frac{1}{27}$

(b)  $2^{-4} = \frac{1}{2^4} = \frac{1}{16}$

**Aufgabe 10.3**

(a)  $(-2)^{-3} = \frac{1}{(-2)^3} = \frac{1}{-8} = -\frac{1}{8}$

(b)  $(-3)^{-5} = \frac{1}{(-3)^5} = \frac{1}{-243} = -\frac{1}{243}$

**Aufgabe 10.4**

(a)  $(-2)^{-10} = \frac{1}{(-2)^{10}} = \frac{1}{1024}$

(b)  $(-10)^{-2} = \frac{1}{(-10)^2} = \frac{1}{100}$

**Aufgabe 10.5**

(a)  $2^{-8} = \frac{1}{2^8} = \frac{1}{256}$

(b)  $(-5)^{-4} = \frac{1}{(-5)^4} = \frac{1}{625}$

**Aufgabe 10.6**

(a)  $\left(\frac{1}{3}\right)^{-2} = \left(\frac{3}{1}\right)^2 = 3^2 = 9$

(b)  $\left(\frac{1}{7}\right)^{-3} = \left(\frac{7}{1}\right)^3 = 7^3 = 343$

### Aufgabe 10.7

$$(a) \left(-\frac{2}{3}\right)^{-4} = \left(-\frac{3}{2}\right)^4 = \frac{81}{16}$$

$$(b) \left(-\frac{14}{11}\right)^{-2} = \left(-\frac{11}{14}\right)^2 = \frac{11^2}{14^2} = \frac{121}{196}$$

### Aufgabe 10.8

$$(a) \left(-\frac{5}{6}\right)^{-3} = \left(-\frac{6}{5}\right)^3 = -\frac{216}{125}$$

$$(b) \left(-\frac{14}{11}\right)^{-1} = \left(-\frac{11}{14}\right)^1 = -\frac{11}{14}$$

### Aufgabe 10.9

$$(a) 0.25^{-1} = \left(\frac{1}{4}\right)^{-1} = \left(\frac{4}{1}\right)^1 = 4$$

$$(b) 0.5^{-2} = \left(\frac{1}{2}\right)^{-2} = 2^2 = 4$$

### Aufgabe 10.10

$$(a) 0.4^{-3} = \left(\frac{2}{5}\right)^{-3} = \left(\frac{5}{2}\right)^3 = \frac{125}{8}$$

$$(b) 0.125^{-2} = \left(\frac{1}{8}\right)^{-2} = \left(\frac{8}{1}\right)^2 = 64$$

### Aufgabe 10.11

$$(a) (-1.5)^{-2} = \left(-\frac{3}{2}\right)^{-2} = \left(-\frac{2}{3}\right)^2 = \frac{4}{9}$$

$$(b) (-0.8)^{-4} = \left(-\frac{4}{5}\right)^{-4} = \left(-\frac{5}{4}\right)^4 = \left(\frac{5}{4}\right)^4 = \frac{625}{256}$$

### Aufgabe 10.12

$$(a) (-4.5)^{-1} = \left(-\frac{9}{2}\right)^{-1} = \left(-\frac{2}{9}\right)^1 = -\frac{2}{9}$$

$$(b) (-1.25)^{-2} = \left(-\frac{5}{4}\right)^{-2} = \left(-\frac{4}{5}\right)^2 = \left(\frac{4}{5}\right)^2 = \frac{16}{25}$$

### Aufgabe 10.13

(a)  $4^0 = 1$

(b)  $(-2)^0 = 1$

### Aufgabe 10.14

(a)  $\frac{1}{729} = \frac{1}{3^6} = 3^{-6}$

(b)  $\frac{1}{125} = \frac{1}{5^3} = 5^{-3}$

### Aufgabe 10.15

(a)  $\frac{1}{256} = \frac{1}{2^8} = 2^{-8}$

(b)  $\frac{1}{343} = \frac{1}{7^3} = 7^{-3}$

### Aufgabe 10.16

(a)  $\frac{1}{1024} = \frac{1}{2^{10}} = 2^{-10}$

(b)  $\frac{1}{27} = \frac{1}{3^3} = 3^{-3}$

### Aufgabe 10.17

(a)  $0.0001 = \frac{1}{1000} = \frac{1}{10^4} = 10^{-4}$

(b)  $0.125 = \frac{125}{1000} = \frac{5^3}{10^3} = \left(\frac{5}{10}\right)^3 = \left(\frac{10}{5}\right)^{-3} = 2^{-3}$

### Aufgabe 10.18

(a)  $0.00032 = \frac{32}{100\,000} = \frac{2^5}{10^5} = \left(\frac{2}{10}\right)^5 = \left(\frac{10}{2}\right)^{-5} = 5^{-5}$

(b)  $0.008 = \frac{8}{1000} = \frac{2^3}{10^3} = \left(\frac{2}{10}\right)^3 = \left(\frac{10}{2}\right)^{-3} = 5^{-3}$