

Aufgabe 1

$$c = \sqrt{a^2 + b^2} = \frac{5}{9}$$

$$q = b^2 : c = \frac{1}{5}$$

$$p = c - q = \frac{16}{45}$$

$$h = \sqrt{p \cdot q} = \frac{4}{15}$$

Aufgabe 2

$$q = b^2 : c = \frac{8}{15}$$

$$p = c - q = \frac{3}{10}$$

$$h = \sqrt{p \cdot q} = \frac{2}{5}$$

$$a = \sqrt{c \cdot p} = \frac{1}{2}$$

Aufgabe 3

$$p = a^2 : c = \frac{27}{100}$$

$$q = c - p = \frac{12}{25}$$

$$h = \sqrt{p \cdot q} = \frac{9}{25}$$

$$b = \sqrt{c \cdot q} = \frac{3}{5}$$

Aufgabe 4

$$p = \sqrt{a^2 - h^2} = \frac{2}{5}$$

$$q = h^2 : p = \frac{9}{40}$$

$$c = p + q = \frac{5}{8}$$

$$b = \sqrt{c \cdot q} = \frac{3}{8}$$

Aufgabe 5

$$q = \sqrt{b^2 - h^2} = \frac{6}{25}$$

$$p = h^2 : q = \frac{32}{75}$$

$$c = p + q = \frac{2}{3}$$

$$a = \sqrt{c \cdot p} = \frac{8}{15}$$

Aufgabe 6

$$c = a^2 : p = \frac{5}{8}$$

$$q = c - p = \frac{2}{5}$$

$$h = \sqrt{p \cdot q} = \frac{3}{10}$$

$$b = \sqrt{c \cdot q} = \frac{1}{2}$$

Aufgabe 7

$$q = c - p = \frac{1}{10}$$

$$h = \sqrt{p \cdot q} = \frac{2}{15}$$

$$a = \sqrt{p \cdot c} = \frac{2}{9}$$

$$b = \sqrt{q \cdot c} = \frac{1}{6}$$

Aufgabe 8

$$c = b^2 : q = \frac{1}{2}$$

$$p = c - q = \frac{9}{50}$$

$$h = \sqrt{p \cdot q} = \frac{6}{25}$$

$$a = \sqrt{p \cdot c} = \frac{3}{10}$$

Aufgabe 9

$$p = c - q = \frac{16}{15}$$

$$h = \sqrt{p \cdot h} = \frac{4}{5}$$

$$a = \sqrt{p \cdot c} = \frac{4}{3}$$

$$b = \sqrt{q \cdot c} = 1$$

Aufgabe 10

$$q = h^2 : p = \frac{1}{5}$$

$$c = p + q = \frac{5}{16}$$

$$a = \sqrt{p \cdot c} = \frac{3}{16}$$

$$b = \sqrt{q \cdot c} = \frac{1}{4}$$

Aufgabe 11

$$p = h^2 : q = \frac{18}{25}$$

$$c = p + q = 2$$

$$a = \sqrt{p \cdot c} = \frac{6}{5}$$

$$b = \sqrt{q \cdot c} = \frac{8}{5}$$

Aufgabe 12

$$h = \sqrt{p \cdot q} = \frac{4}{25}$$

$$c = p + q = \frac{1}{3}$$

$$a = \sqrt{p \cdot c} = \frac{1}{5}$$

$$b = \sqrt{q \cdot c} = \frac{4}{15}$$

Aufgabe 13*

$$\begin{aligned}h^2 = p \cdot q \quad \text{und} \quad q = c - p \quad \Rightarrow \quad h^2 &= p(c - p) \\h^2 &= cp - p^2 \\p^2 - cp + h^2 &= 0\end{aligned}$$

$$D = (-c)^2 - 4 \cdot h^2 = \frac{49}{900}$$

$$p_1 = \frac{1}{2}(c - \sqrt{D}) = \frac{3}{10} \quad \Rightarrow \quad q_1 = c - p_1 = \frac{8}{15}$$

$$p_2 = \frac{1}{2}(c + \sqrt{D}) = \frac{8}{15} \quad \Rightarrow \quad q_2 = c - p_2 = \frac{3}{10}$$

$$a_1 = \sqrt{c \cdot p_1} = \frac{1}{2} \quad a_2 = \sqrt{c \cdot p_2} = \frac{2}{3}$$

$$b_1 = \sqrt{c \cdot q_1} = \frac{2}{3} \quad b_2 = \sqrt{c \cdot q_2} = \frac{1}{2}$$

Aufgabe 14*

$$\begin{aligned}a^2 = p \cdot c \quad \text{und} \quad c = p + q \quad \Rightarrow \quad a^2 &= p(p + q) \\a^2 &= p^2 + qp \\p^2 + qp - a^2 &= 0\end{aligned}$$

$$D = q^2 - 4 \cdot (-a^2) = \frac{1681}{10000}$$

$$p_1 = \frac{1}{2}(-q + \sqrt{D}) = \frac{4}{25} \quad \Rightarrow \quad c_1 = p_1 + q = \frac{1}{4}$$

$$p_2 = \frac{1}{2}(-q - \sqrt{D}) = -\frac{1}{4} \quad (\text{sinnlos})$$

$$h_1 = \sqrt{p_1 \cdot q} = \frac{3}{25}$$

$$b_1 = \sqrt{c \cdot q_1} = \frac{3}{20}$$

Aufgabe 15*

$$\begin{aligned}b^2 = q \cdot c \quad \text{und} \quad c = p + q \quad \Rightarrow \quad b^2 &= q(p + q) \\b^2 &= pq + q^2 \\q^2 + pq - b^2 &= 0\end{aligned}$$

$$D = p^2 - 4 \cdot (-b^2) = \frac{6724}{5625}$$

$$q_1 = \frac{1}{2}(-p + \sqrt{D}) = \frac{32}{75} \quad \Rightarrow \quad c_1 = p + q_1 = \frac{2}{3}$$

$$q_2 = \frac{1}{2}(-p - \sqrt{D}) = -\frac{2}{3} \quad (\text{sinnlos})$$

$$h_1 = \sqrt{p \cdot q_1} = \frac{8}{25}$$

$$a_1 = \sqrt{c \cdot p_1} = \frac{2}{5}$$