

Aufgabe 4

a)

1)

$$\sin(\alpha) = \frac{p}{o}$$

$$\cos(\alpha) = \frac{q}{o}$$

$$\tan(\alpha) = \frac{p}{q}$$

$$\sin(\beta) = \frac{q}{o}$$

$$\cos(\beta) = \frac{p}{o}$$

$$\tan(\beta) = \frac{q}{p}$$

2)

$$\sin(\alpha) = \frac{r}{t}$$

$$\cos(\alpha) = \frac{s}{t}$$

$$\tan(\alpha) = \frac{r}{s}$$

$$\sin(\beta) = \frac{s}{t}$$

$$\cos(\beta) = \frac{r}{t}$$

$$\tan(\beta) = \frac{s}{r}$$

3)

$$\sin(\alpha) = \frac{n}{p}$$

$$\cos(\alpha) = \frac{m}{p}$$

$$\tan(\alpha) = \frac{n}{m}$$

$$\sin(\beta) = \frac{m}{p}$$

$$\cos(\beta) = \frac{n}{p}$$

$$\tan(\beta) = \frac{m}{n}$$

b)

1)

$$\sin(\alpha) = \frac{5}{13} \approx 0,38$$

$$\cos(\alpha) = \frac{12}{13} \approx 0,92$$

$$\tan(\alpha) = \frac{5}{12} \approx 0,42$$

$$\sin(\beta) = \frac{12}{13} \approx 0,92$$

$$\cos(\beta) = \frac{5}{13} \approx 0,38$$

$$\tan(\beta) = \frac{12}{5} = 2,4$$

2)

$$\sin(\alpha) = \frac{9}{15} = 0,6$$

$$\cos(\alpha) = \frac{12}{15} = 0,8$$

$$\tan(\alpha) = \frac{9}{12} = 0,75$$

$$\sin(\beta) = \frac{12}{15} = 0,8$$

$$\cos(\beta) = \frac{9}{15} = 0,6$$

$$\tan(\beta) = \frac{12}{9} \approx 1,33$$

3)

$$\sin(\alpha) = \frac{1,5}{2,5} = 0,6$$

$$\cos(\alpha) = \frac{2}{2,5} = 0,8$$

$$\tan(\alpha) = \frac{1,5}{2} = 0,75$$

$$\sin(\beta) = \frac{2}{2,5} = 0,8$$

$$\cos(\beta) = \frac{1,5}{2,5} = 0,6$$

$$\tan(\beta) = \frac{2}{1,5} \approx 1,33$$

Aufgabe 5

a)

$$\begin{aligned} \sin(\alpha) &= 0,5 & | \sin^{-1} \\ \alpha &= 30^\circ \end{aligned}$$

b)

$$\begin{aligned} \tan(\beta) &= 1 & | \tan^{-1} \\ \beta &= 45^\circ \end{aligned}$$

c)

$$\begin{aligned} \cos(\gamma) &= 0,5 & | \cos^{-1} \\ \gamma &= 60^\circ \end{aligned}$$

d)

$$\begin{aligned} \sin(\gamma) &= 0 & | \sin^{-1} \\ \gamma &= 0^\circ \end{aligned}$$

e)

$$\begin{aligned} \sin(\gamma) &= \frac{3}{4} & | \sin^{-1} \\ \gamma &\approx 48,59^\circ \end{aligned}$$

f)

$$\begin{aligned} \cos(\alpha) &= 0,5 \cdot \sqrt{2} & | \cos^{-1} \\ \alpha &= 45^\circ \end{aligned}$$

g)

$$\begin{aligned} \tan(\beta) &= \sqrt{3} & | \tan^{-1} \\ \beta &= 60^\circ \end{aligned}$$

h)

$$\begin{aligned} \sin(\gamma) &= 0,5 \cdot \sqrt{3} & | \sin^{-1} \\ \gamma &= 60^\circ \end{aligned}$$