

Aufgabe 1977 10a:

4 P

1. Beweise, dass

$$\cos 30^\circ = \frac{1}{2}\sqrt{3}$$

gilt.

2. Bestimme aus der Zahlentafel

$$\cos 117,5^\circ \text{ und } \sin 297^\circ 15'.$$

3. Gib alle Lösungen der Aussageformen

$$\sin \alpha = -0,8660 \text{ und } \cos \alpha = 0,73$$

im Intervall $0^\circ \leq \alpha \leq 360^\circ$ an.

Lösung 1977 10a:

1. Beweis $\cos 30^\circ = \frac{1}{2}\sqrt{3}$:

$$\cos 30^\circ = \frac{\text{Ankathete}}{\text{Hypotenuse}} = \frac{h}{a} \quad \begin{array}{l} \text{Kosinusfunktion im} \\ \text{rechtwinkligen} \\ \text{gelben Teildreieck} \end{array}$$

$$\cos 30^\circ = \frac{\frac{a}{2}\sqrt{3}}{a}$$

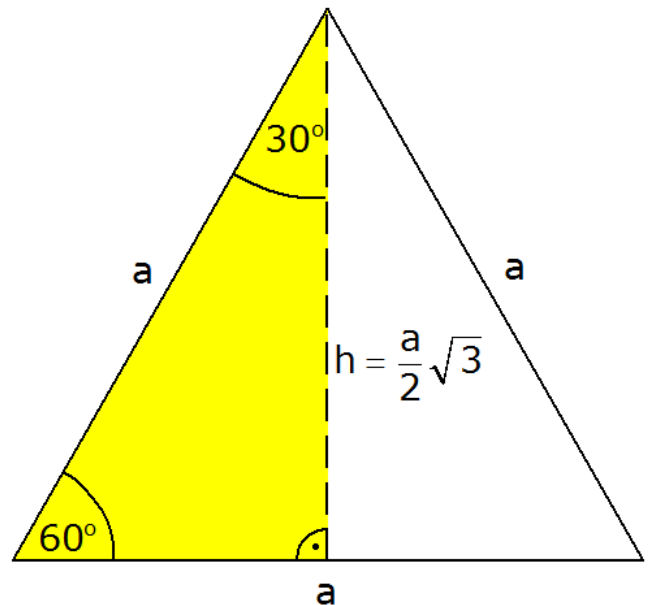
$$\cos 30^\circ = \frac{\frac{a}{2}\sqrt{3}}{\frac{a}{1}}$$

$$\cos 30^\circ = \frac{a}{2}\sqrt{3} \cdot \frac{1}{a}$$

$$\cos 30^\circ = \cancel{a}^{\times} \sqrt{3} \cdot \cancel{a}^{\times} \frac{1}{a}$$

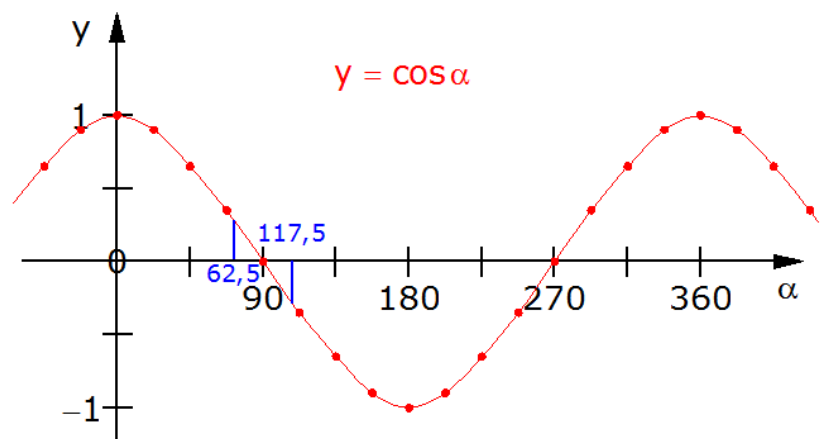
$$\cos 30^\circ = \frac{1}{2}\sqrt{3}$$

Bruch kürzen



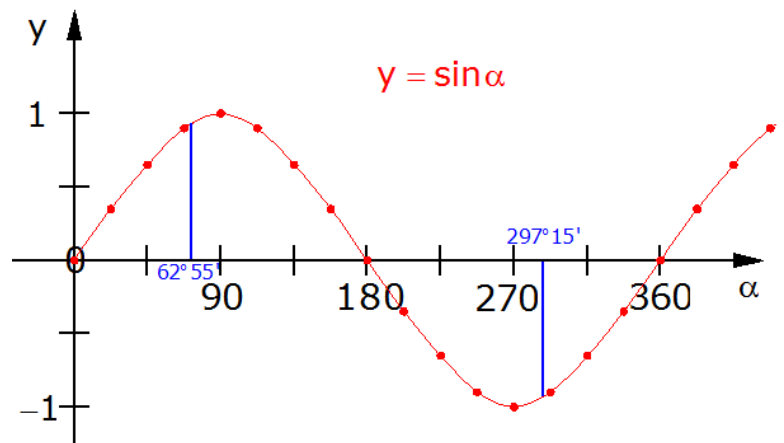
2. Zahlentafel:

$$\underline{\underline{\cos 117,5^\circ = -\cos 62,5^\circ = -0,4617}}$$



Lösung 1977 10a:

$$\underline{\underline{\sin 297^\circ 15' = -\sin 62^\circ 55' = -0,8890}}$$

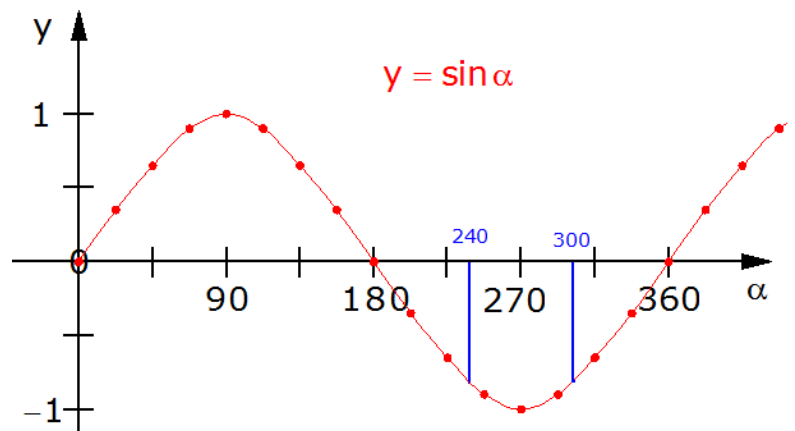


3. Lösungen:

$$\sin \alpha = -0,8660$$

$$\underline{\underline{\alpha_1 = 240^\circ}}$$

$$\underline{\underline{\alpha_2 = 300^\circ}}$$



$$\cos \alpha = 0,73$$

$$\underline{\underline{\alpha_1 = 43,1^\circ}}$$

$$\underline{\underline{\alpha_2 = 316,9^\circ}}$$

