

Geometrie-Aufgaben: Trigonometrie 6



Welche der folgenden Aussagen sind wahr?

- Auswendig*
1.  $\sin^2 \varphi - \cos^2 \varphi = 1$  falsch ( $\sin^2 \varphi + \cos^2 \varphi = 1$ )
  2.  $\tan \varphi = \frac{\cos \varphi}{\sin \varphi}$  falsch ( $\frac{1}{\tan \varphi} = \frac{\cos \varphi}{\sin \varphi}$ )
  3.  $\cos \varphi = \sin(90^\circ - \varphi)$  wahr
  4.  $\tan 45^\circ = 1$  wahr
  5.  $\cos \varphi = \cos(-\varphi)$  wahr
  6.  $\sin \varphi = \sin(-\varphi)$  falsch ( $\sin \varphi = -\sin(-\varphi)$ )
  7.  $\tan \varphi \in [0, \infty[$ ,  $\forall \varphi$  falsch ( $\tan \varphi \in \mathbb{R}$ )
  8.  $\sin \varphi = \sqrt{1 + \cos^2 \varphi}$  falsch ( $\sin \varphi = \sqrt{1 - \cos^2 \varphi}$ )
  9.  $\cos \varphi = \sin \varphi \cdot \tan \varphi$  falsch ( $\cos \varphi = \frac{\sin \varphi}{\tan \varphi}$ )
  10.  $\tan \varphi = -\tan(-\varphi)$  wahr
  11.  $\sin 180^\circ = -1$  falsch ( $\sin(180^\circ) = 0$ )
  12.  $\cos \varphi = -\cos(180^\circ - \varphi)$  wahr
  13.  $\sin \varphi = \sin(180^\circ - \varphi)$  wahr
  14.  $\cos \varphi \in [-1, 1]$ ,  $\forall \varphi$  wahr
  15.  $\cos^2 \varphi = 1 + \sin^2 \varphi$  falsch ( $\cos^2 \varphi = 1 - \sin^2 \varphi$ )
  16.  $\sin \varphi = \tan \varphi \cdot \cos \varphi$  wahr
  17.  $\sin \varphi = \cos(90^\circ - \varphi)$  wahr
  18.  $\cos \varphi = \cos(180^\circ + \varphi)$  falsch ( $\cos \varphi = -\cos(180^\circ + \varphi)$ )
  19.  $\sin \varphi = \sin(180^\circ + \varphi)$  falsch ( $\sin \varphi = -\sin(180^\circ + \varphi)$ )
  20.  $\sin \varphi \in [-1, 1]$ ,  $\forall \varphi > 0^\circ$  wahr

Welche der folgenden Aussagen sind falsch ?

1.  $\sin(\pi/4) > 0.5$  wahr
2.  $\cos(\pi/3) < -0.5$  falsch
3.  $\tan(\pi/2) > 0$  ( $\infty$ ) falsch
4.  $\cos(-3\pi/2) > -2$  wahr
5.  $\sin(-\pi/6) < 0$  wahr
6.  $\tan -\pi = \tan \pi$  falsch
7.  $\cos \pi + \sin \pi = 1$  falsch
8.  $\frac{\cos \pi}{\cos(\pi/2)} = -1$  falsch
9.  $\frac{\sin(\pi/3)}{\sin(\pi/4)} = \frac{1}{\sqrt{2}}$  falsch =  $\frac{\sqrt{6}}{2}$
10.  $\frac{\cos(\pi/6)}{\sin(\pi/6)} = 1$  falsch =  $\sqrt{3}$
11.  $\tan(\pi/6) = 1$  falsch =  $\frac{\sqrt{3}}{3}$
12.  $\sin \psi = \sin(k \cdot \pi/2 + \psi), k \in \mathbb{Z}$  falsch  $\forall k \in \mathbb{N}_4$
13.  $\tan \psi = \tan(k \cdot \pi + \psi), k \in \mathbb{Z}$  wahr  $\forall k \in \mathbb{N}_2$
14.  $\cos \psi = \cos(k \cdot 2\pi + \psi), k \in \mathbb{Z}$  wahr

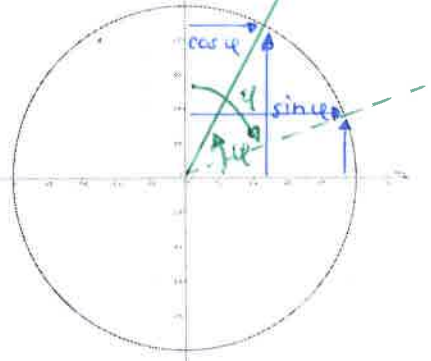
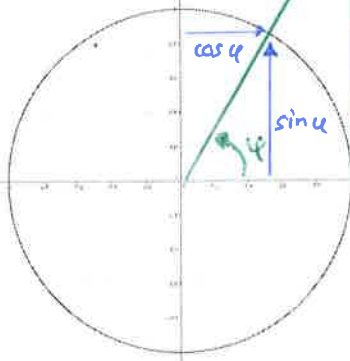
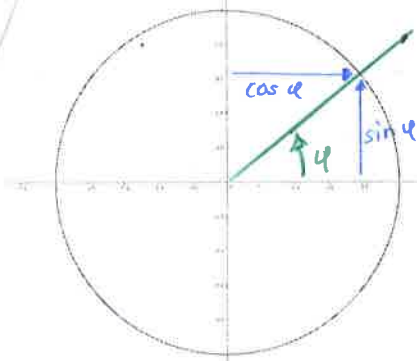
Formuliere drei eigene wahre Aussagen:

- $\tan(\pi/4) > 1$
- $\sin(\pi/3) < 1$
- $\tan\left(\frac{\pi}{x}\right) < 0.5 \quad \forall x \in \mathbb{N}_{\geq 6}$

①  $\sin^2(\varphi) + \cos^2(\varphi) = 1$

②  $\tan(\varphi) = \frac{\cos(\varphi)}{\sin(\varphi)}$

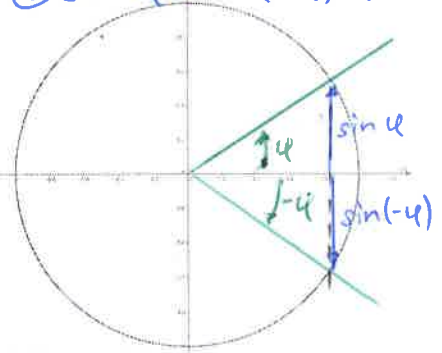
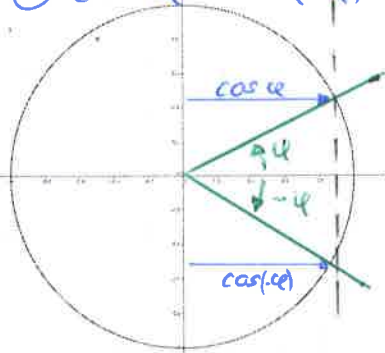
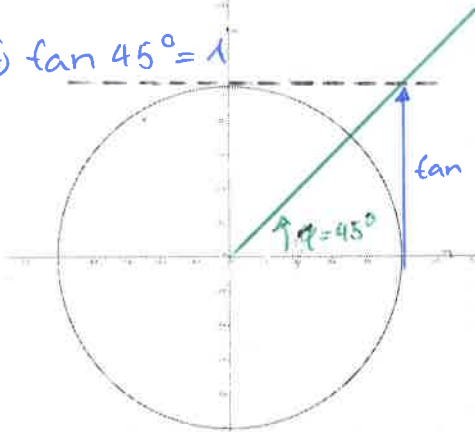
③  $\cos(\varphi) = \sin(90^\circ - \varphi)$



④  $\tan 45^\circ = 1$

⑤  $\cos \varphi = \cos(-\varphi)$

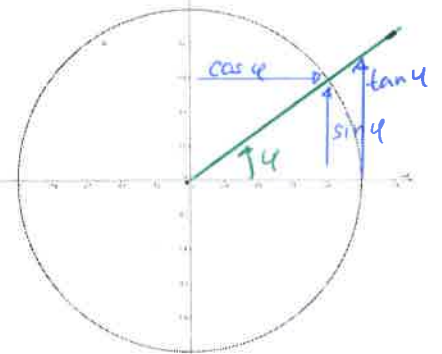
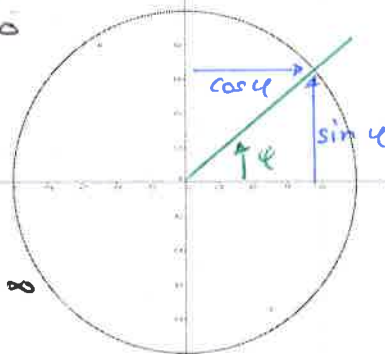
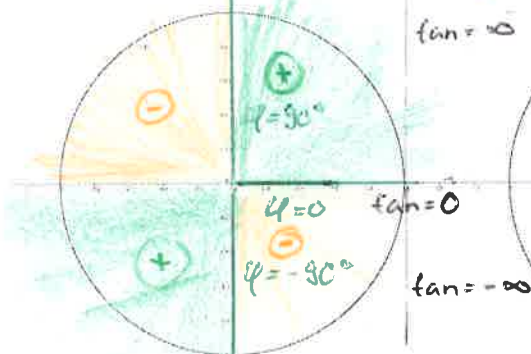
⑥  $\sin \varphi = \sin(-\varphi)$



⑦  $\tan \varphi \in [0, \infty[ \forall \varphi$

⑧  $\sin \varphi = \sqrt{1 + \cos^2 \varphi}$

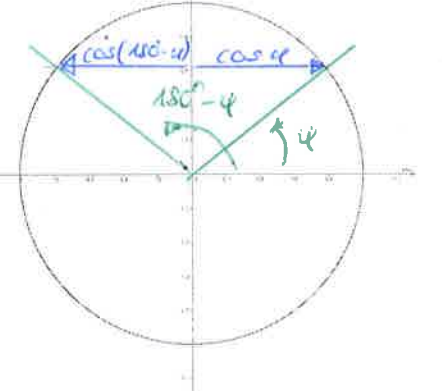
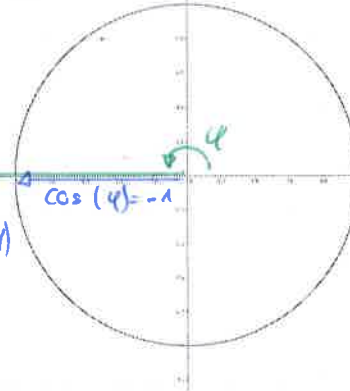
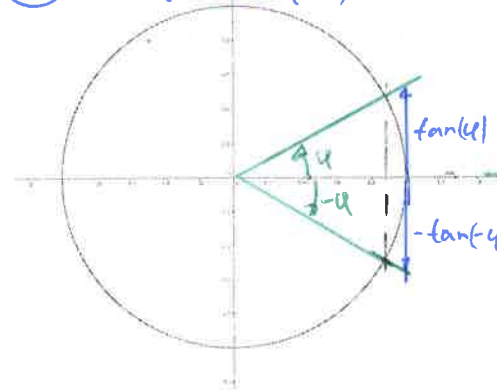
⑨  $\cos \varphi = \sin \varphi \cdot \tan \varphi$



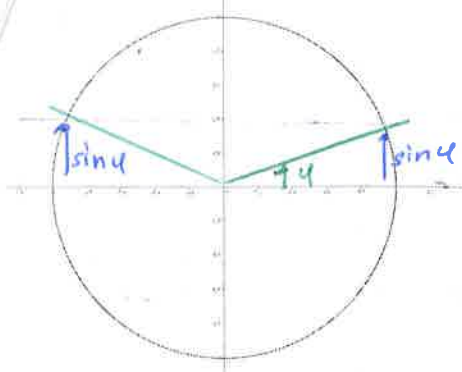
⑩  $\tan \varphi = -\tan(-\varphi)$

⑪  $\sin 180^\circ = -1$

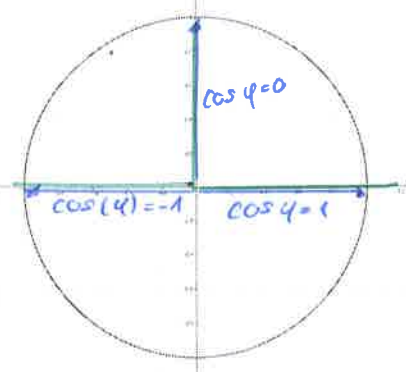
⑫  $\cos \varphi = -\cos(180^\circ - \varphi)$



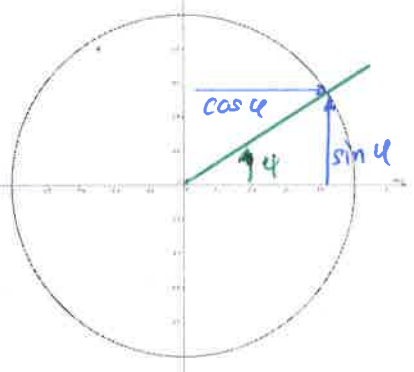
①  $\sin \varphi = \sin(180^\circ - \varphi)$



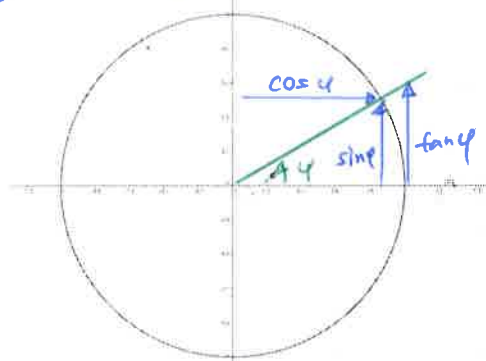
⑭  $\cos \varphi \in [-1, 1], \forall \varphi$



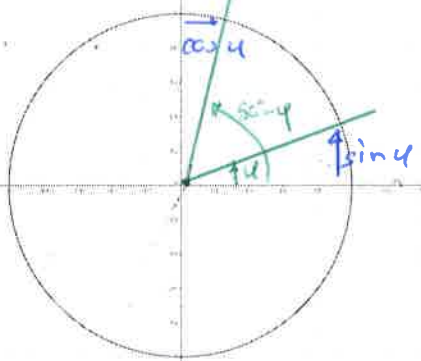
⑮  $\cos^2 \varphi = 1 - \sin^2 \varphi$



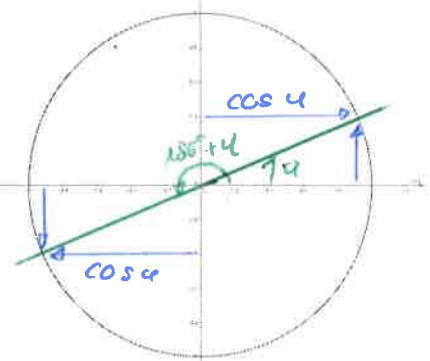
⑯  $\sin \varphi = \tan \varphi \cdot \cos \varphi$



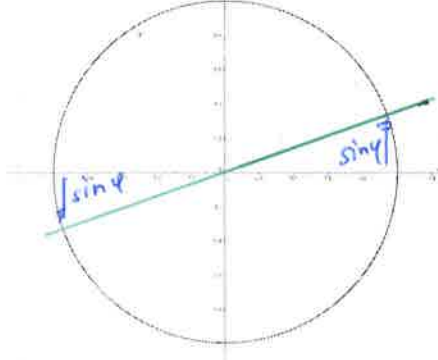
⑰  $\sin \varphi = \cos(90^\circ - \varphi)$



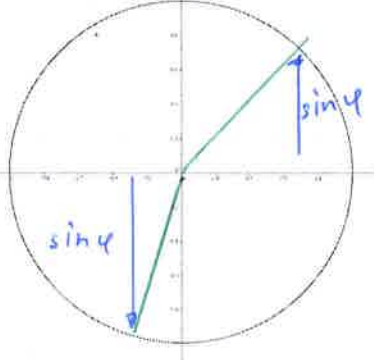
⑱  $\cos \varphi = \cos(180^\circ + \varphi)$



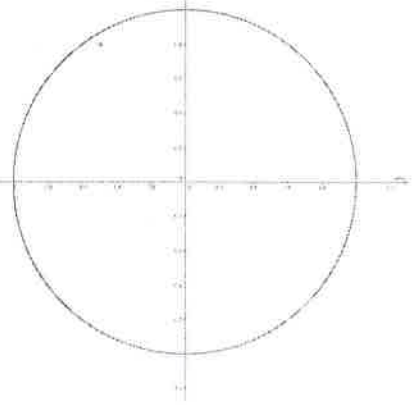
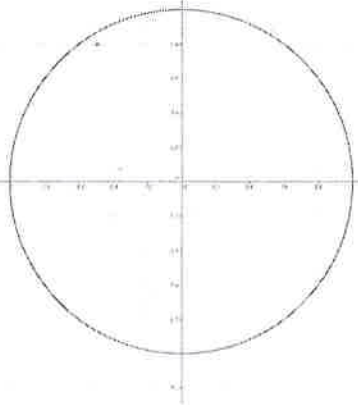
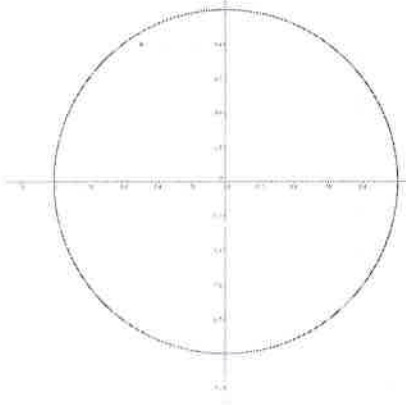
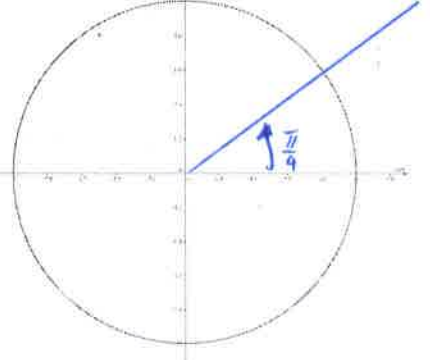
⑲  $\sin \varphi = \sin(180^\circ + \varphi)$



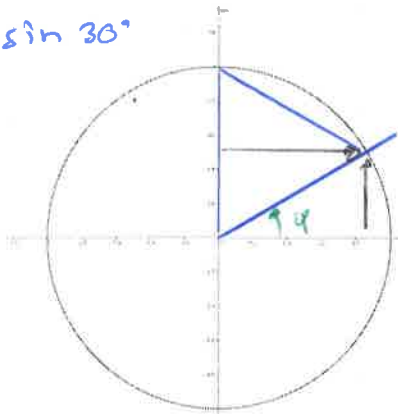
⑳  $\sin \varphi \in [-1, 1], \forall \varphi > 0^\circ$



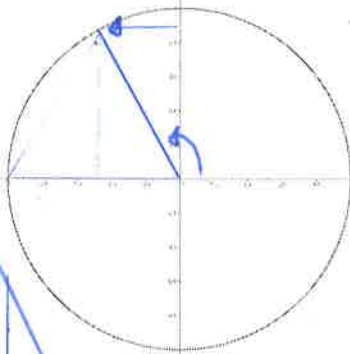
㉑  $\sin(\pi/4) > 0.5$



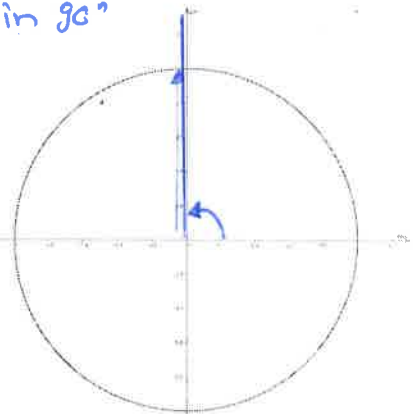
$\sin 30^\circ$



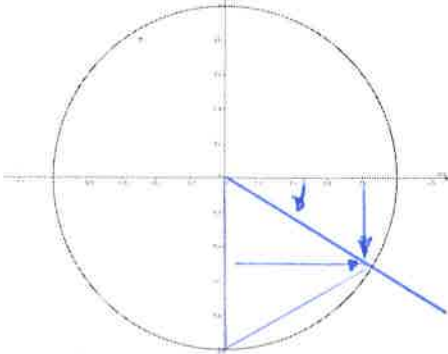
$\cos 120^\circ$



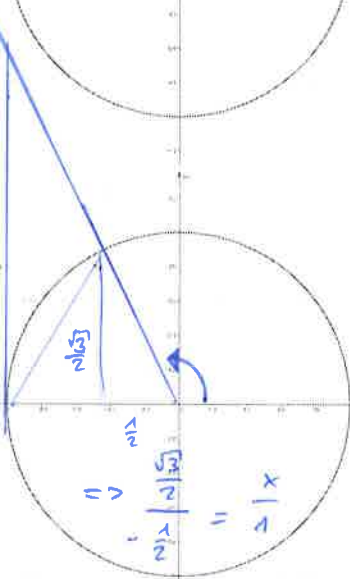
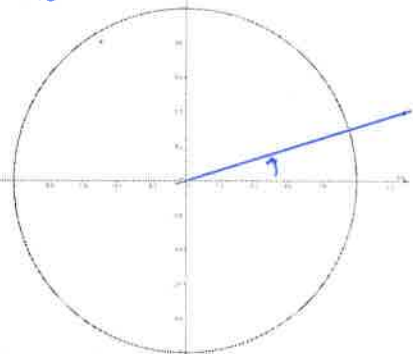
$\sin 90^\circ$



$\cos (-30^\circ)$



12.



Eigene Aussagen

