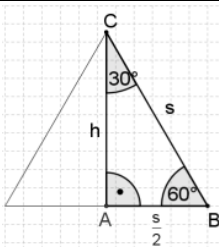
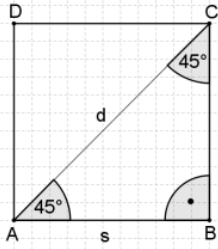


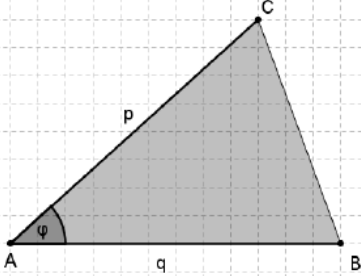
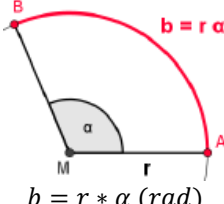
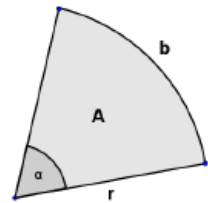
# TRIGONOMETRIE

$\sin(\alpha) = \frac{\text{Gegenkathete}}{\text{Hypotenuse}}$	$\tan(\alpha) = \frac{\sin(\alpha)}{\cos(\alpha)}$	Sinussatz: $\frac{a}{b} = \frac{\sin(\alpha)}{\sin(\beta)}$
$\cos(\alpha) = \frac{\text{Ankathete}}{\text{Hypotenuse}}$	$\sin^2(\alpha) + \cos^2(\alpha) = 1$	Kosinussatz: $a^2 = b^2 + c^2 - 2bc \cdot \cos(\alpha)$
$\tan(\alpha) = \frac{\text{Gegenkathete}}{\text{Ankathete}}$	$\sin(90^\circ - \alpha) = \cos(\alpha)$	

## 1.1 Spezielle Winkel Dreiecke

	0°	30°	45°	60°	90°				
<b>sin</b>	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1				
<b>cos</b>	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0				
<b>tan</b>	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	$\text{undef} \left(\frac{1}{0}\right)$	$s = 1$	$h = \sqrt{3}$	$s = 1$	$d = \sqrt{2}$

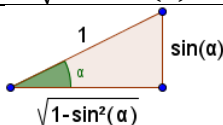
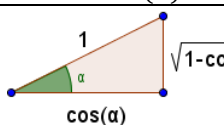
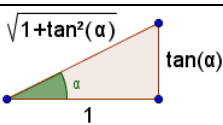
## 1.2 Flächeninhalt Bogen

 $A = \frac{1}{2} * p * q * \sin(\varphi)$	<b>Bogenmass</b> $180^\circ = \pi$ $\alpha(\text{bog}) = \frac{\pi}{180^\circ} * \alpha(\text{grad})$ $\alpha(\text{grad}) = \frac{180^\circ}{\pi} * \alpha(\text{bog})$	<b>Bogenlänge</b>  $b = r * \alpha(\text{rad})$	<b>Kreissektor</b>  $A = \frac{b * r}{2} = \frac{\alpha * r^2}{2}$
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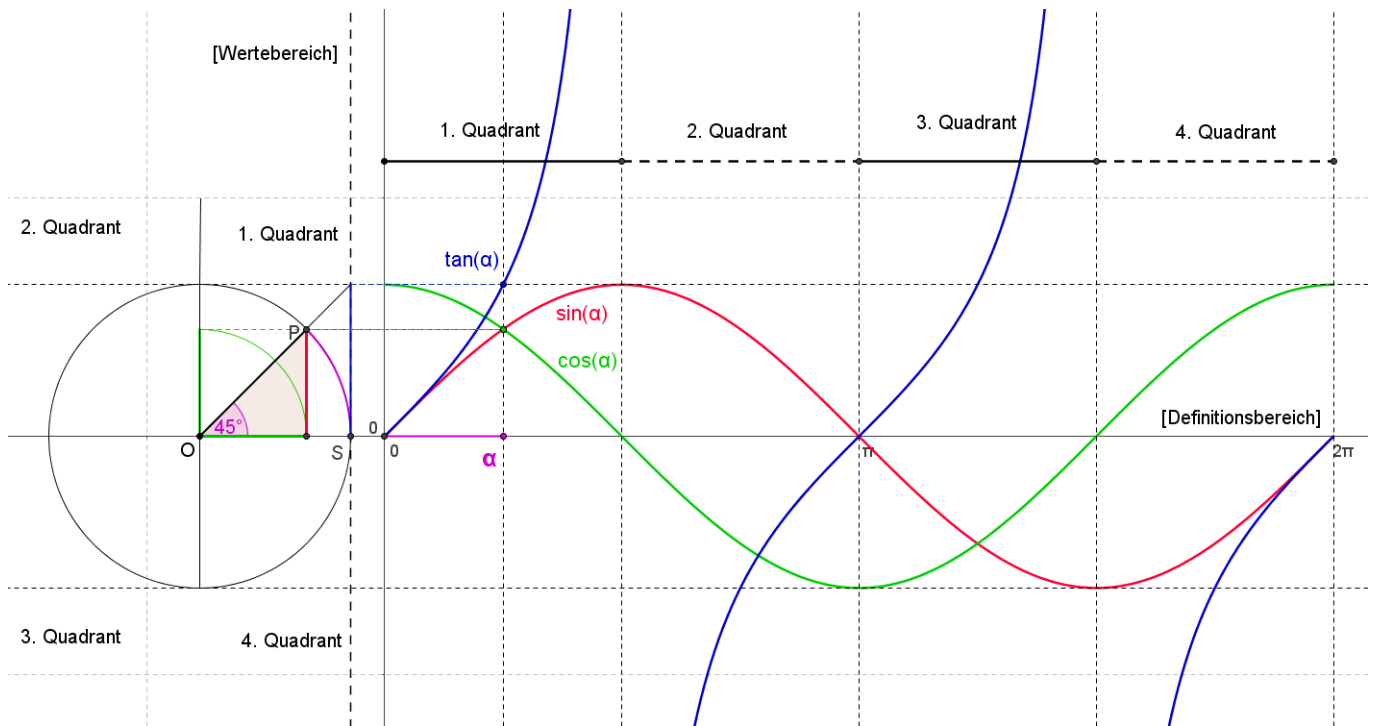
## 1.3 Definition

Funktion	Definition	Definitionsbereich	Wertebereich	Symmetrie
$\sin(\alpha)$	y-Koordinate des Punktes P auf dem Einheitskreis	$D = \mathbb{R}$	$W = [-1; 1]$	$\sin(-x) = -\sin(x)$
$\cos(\alpha)$	x-Koordinate des Punktes P auf dem Einheitskreis	$D = \mathbb{R}$	$W = [-1; 1]$	$\cos(-x) = \cos(x)$
$\tan(\alpha)$	y-Koordinate des Punktes H auf dem Tangententräger	$D = \mathbb{R} \setminus \left\{ \frac{\pi}{2} + k * \pi \right\}$ $k \in \mathbb{Z}$	$W = \mathbb{R}$	$\tan(-x) = -\tan(x)$

## 1.4 Ersetzungen

	<i>sinus</i>	<i>cosinus</i>	<i>tangens</i>
$\sin(\alpha)$	–	$\sqrt{1 - \cos^2(\alpha)}$	$\frac{\tan(\alpha)}{\sqrt{1 + \tan^2(\alpha)}}$
$\cos(\alpha)$	$\sqrt{1 - \sin^2(\alpha)}$	–	$\frac{1}{\sqrt{1 + \tan^2(\alpha)}}$
$\tan(\alpha)$	$\frac{\sin(\alpha)}{\sqrt{1 - \sin^2(\alpha)}}$	$\frac{\sqrt{1 - \cos^2(\alpha)}}{\cos(\alpha)}$	–
			

### 1.5 Einheitskreis und Funktionsgraph



### 1.6 Umkehrfunktionen

