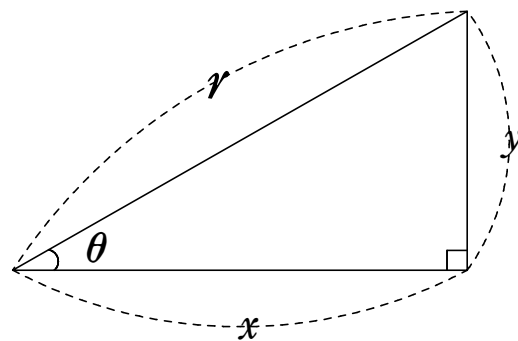


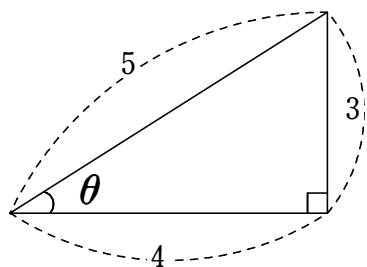
1 三角比とは「直角三角形の比」



$$\sin \theta$$

$$\cos \theta$$

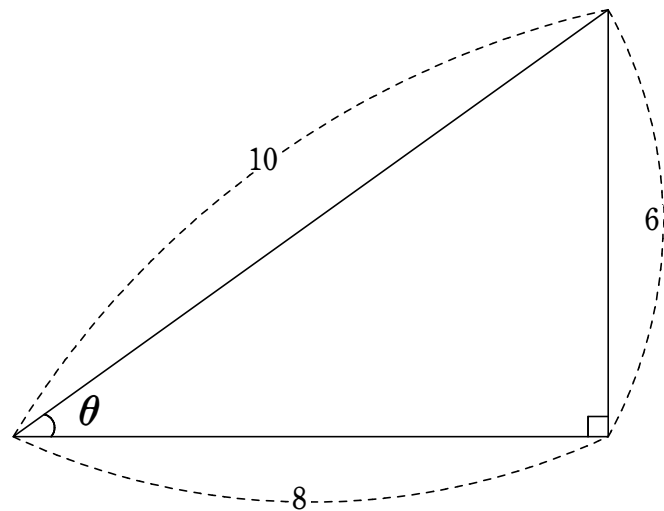
$$\tan \theta$$



$$\sin \theta$$

$$\cos \theta$$

$$\tan \theta$$

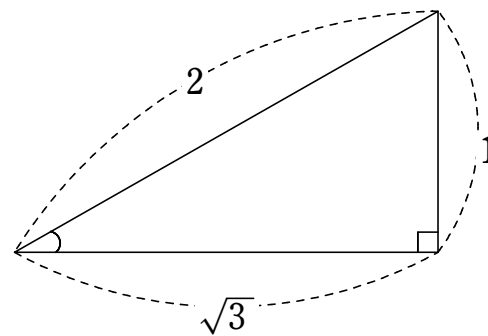


$$\sin \theta$$

$$\cos \theta$$

$$\tan \theta$$

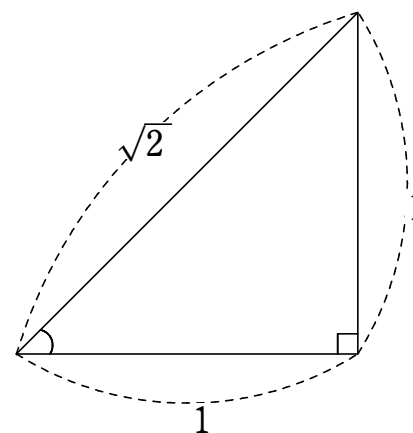
2 30°, 45°, 60°の正弦・余弦・正接



$$\sin \theta$$

$$\cos \theta$$

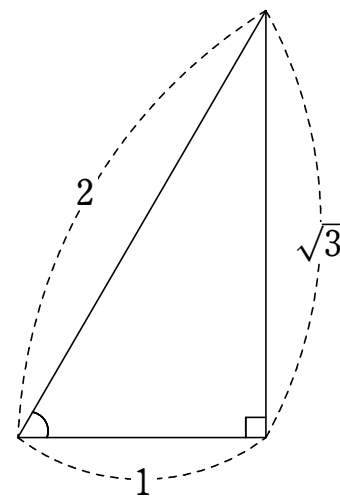
$$\tan \theta$$



$$\sin \theta$$

$$\cos \theta$$

$$\tan \theta$$

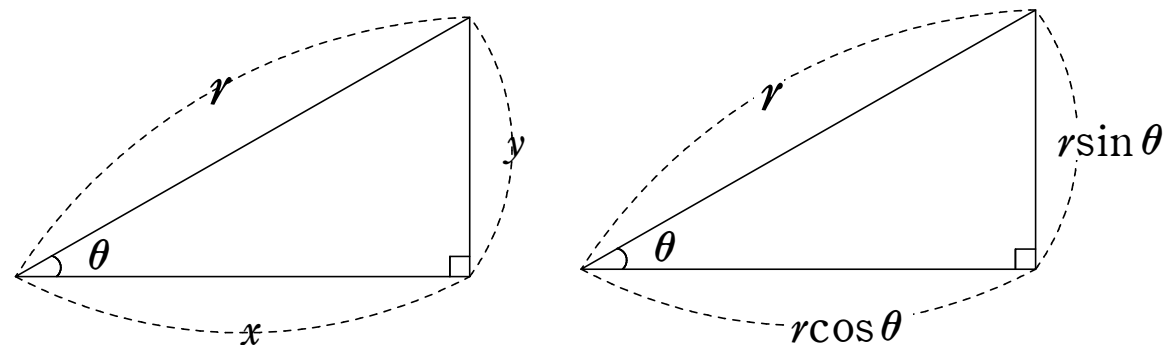


$$\sin \theta$$

$$\cos \theta$$

$$\tan \theta$$

3 三角比の応用 (物理でよく使います)

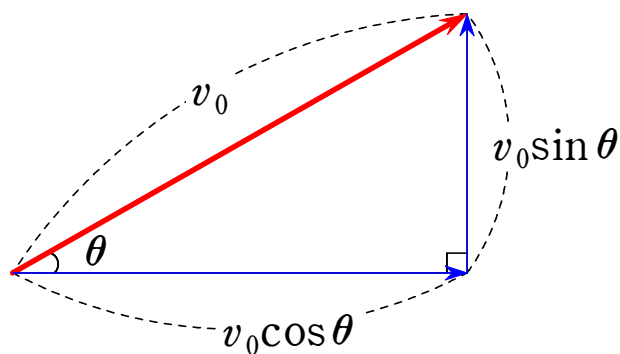


$$\sin \theta = \frac{y}{r} \rightarrow y = r \sin \theta$$

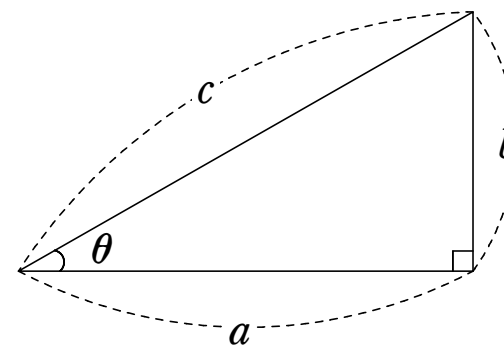
$$\cos \theta = \frac{x}{r} \rightarrow x = r \cos \theta$$

$$\tan \theta = \frac{y}{x} \rightarrow y = x \tan \theta$$

【物理】 水平面に対して角度 θ で速度 v_0 で投げ上げたとき、
水平成分と鉛直成分の速度に分解



4 三角比の相互関係 (まずはこれ!)



三平方の定理

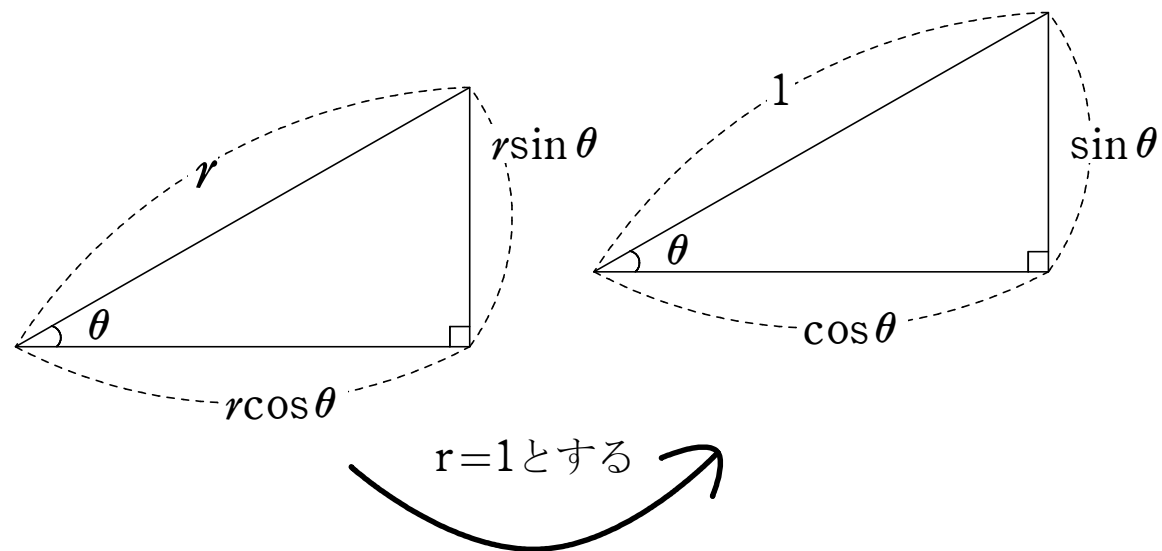
$$a^2 + b^2 = c^2$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

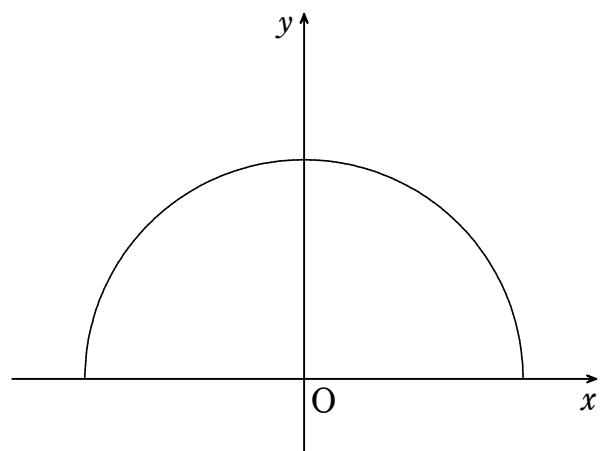
$$\tan \theta = \frac{\sin \theta}{\cos \theta}$$

$$1 + \tan^2 \theta = \frac{1}{\cos^2 \theta}$$

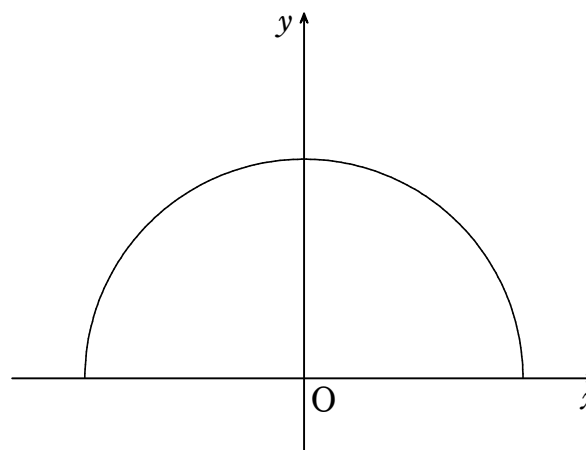
5 単位円 (半径 1 の円 x 座標が $\cos\theta$, y 座標が $\sin\theta$, 傾きが $\tan\theta$)



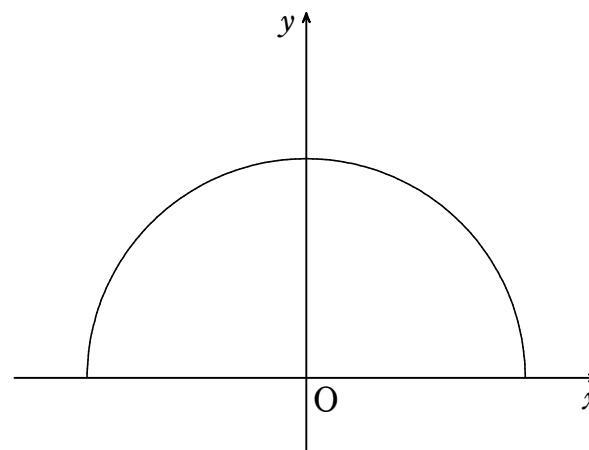
(1) $\sin 0^\circ \rightarrow 0^\circ$ の y 座標, $\cos 0^\circ \rightarrow 0^\circ$ の x 座標, $\tan 0^\circ \rightarrow 0^\circ$ の傾き



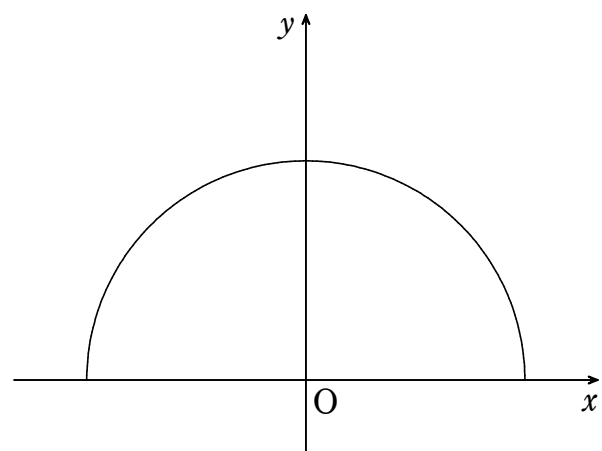
(2) $\sin 30^\circ \rightarrow 30^\circ$ の y 座標, $\cos 30^\circ \rightarrow 30^\circ$ の x 座標, $\tan 30^\circ \rightarrow 30^\circ$ の傾き



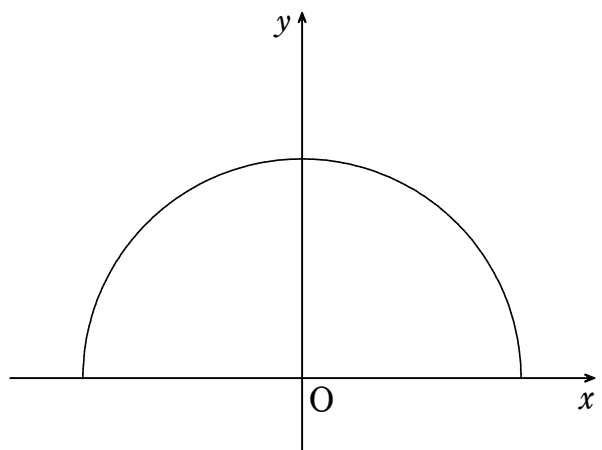
(3) $\sin 45^\circ \rightarrow 45^\circ$ の y 座標, $\cos 45^\circ \rightarrow 45^\circ$ の x 座標, $\tan 45^\circ \rightarrow 45^\circ$ の傾き



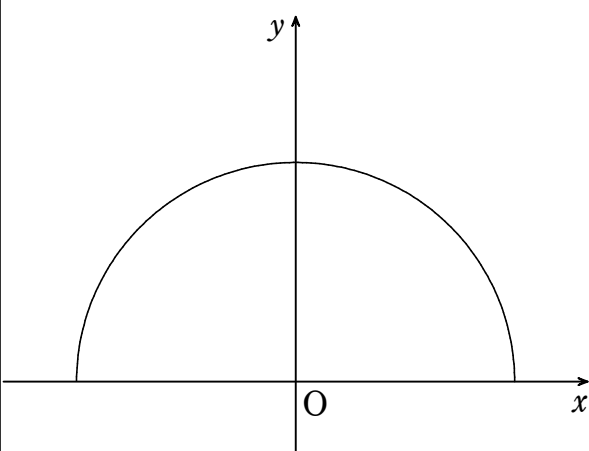
(4) $\sin 60^\circ \rightarrow 60^\circ$ の_____, $\cos 60^\circ \rightarrow 60^\circ$ の_____, $\tan 60^\circ \rightarrow 60^\circ$ の_____



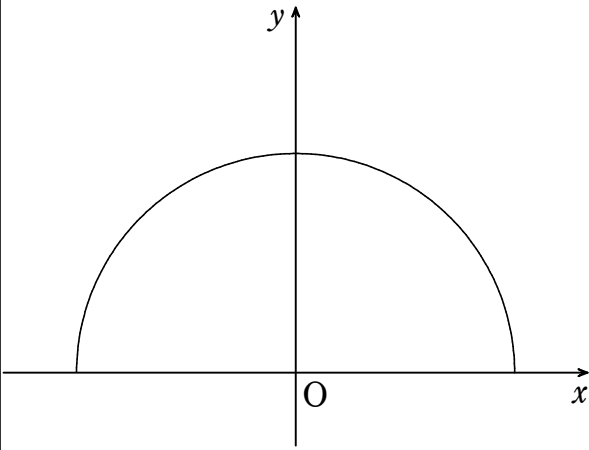
(5) $\sin 90^\circ \rightarrow 90^\circ$ の_____, $\cos 90^\circ \rightarrow 90^\circ$ の_____, $\tan 90^\circ \rightarrow 90^\circ$ の_____



(6) $\sin 120^\circ \rightarrow 120^\circ$ の_____, $\cos 120^\circ \rightarrow 120^\circ$ の_____, $\tan 120^\circ \rightarrow 120^\circ$ の_____



(7) $\sin 135^\circ \rightarrow 135^\circ$ の_____, $\cos 135^\circ \rightarrow 135^\circ$ の_____, $\tan 135^\circ \rightarrow 135^\circ$ の_____



6 次の値を求めよ。

(1) $\sin 30^\circ$

(2) $\sin 45^\circ$

(3) $\cos 60^\circ$

(4) $\sin 120^\circ$

(5) $\tan 45^\circ$

(6) $\cos 150^\circ$

(7) $\tan 150^\circ$

(8) $\cos 30^\circ$

(9) $\sin 180^\circ$

(10) $\tan 60^\circ$

(11) $\sin 60^\circ$

(12) $\cos 45^\circ$

7 $0^\circ \leq \theta \leq 180^\circ$ のとき、次の方程式を解け。

(1) $\sin \theta = 0$

(2) $\cos \theta = 0$

(3) $\tan \theta = 0$

(4) $\sin \theta = 1$

(5) $\cos \theta = 1$

(6) $\tan \theta = 1$

$$(7) \sin \theta = \frac{1}{2}$$

$$(8) \cos \theta = -\frac{1}{2}$$

$$(9) \tan \theta = -\sqrt{3}$$

$$(10) \sin \theta = \frac{\sqrt{3}}{2}$$

$$(11) \cos \theta = -\frac{\sqrt{3}}{2}$$

$$(12) \tan \theta = \frac{1}{\sqrt{3}}$$

8 $0^\circ \leq \theta \leq 180^\circ$ のとき、次の不等式を解け。

(1) $\sin \theta > \frac{1}{2}$

(2) $\sin \theta \leq \frac{\sqrt{3}}{2}$

(3) $\cos \theta \geq -\frac{1}{2}$

(4) $\tan \theta \geq 1$