Unit Circle

$(0, 1)$ $\frac{\pi}{2}$ $90°$

$\left(-\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$\left(-\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ $\frac{2\pi}{3}$ $120°$

$\left(-\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ $\frac{3\pi}{4}$ $135°$

$\frac{5\pi}{6}$ $150°$

$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$

$\left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2}\right)$ $\frac{\pi}{3}$ $60°$

$\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$ $\frac{\pi}{4}$ $45°$

$\frac{\pi}{6}$ $30°$

$(-1, 0)$ π $180°$

$0°$ $360°$ 2π O $(1, 0)$

$210°$ $\frac{7\pi}{6}$ $225°$ $\frac{5\pi}{4}$ $240°$ $\frac{4\pi}{3}$

$\left(-\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

$\left(-\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

$\left(-\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$

$270°$ $\frac{3\pi}{2}$

$330°$ $\frac{11\pi}{6}$ $315°$ $\frac{7\pi}{4}$ $300°$ $\frac{5\pi}{3}$

$\left(\frac{\sqrt{3}}{2}, -\frac{1}{2}\right)$

$\left(\frac{\sqrt{2}}{2}, -\frac{\sqrt{2}}{2}\right)$

$\left(\frac{1}{2}, -\frac{\sqrt{3}}{2}\right)$
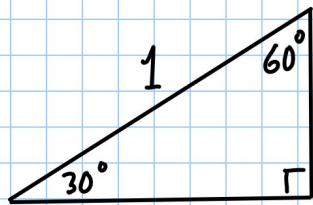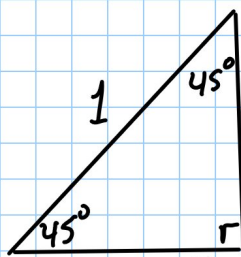
$(0, -1)$

$30° - 60° - 90°$

short $= \frac{1}{2}$ hyp $= \frac{1}{2}$

long $= \sqrt{3} \cdot$ short $= \frac{\sqrt{3}}{2}$

$45° - 45° - 90°$

$x = \frac{\sqrt{2}}{2}$

$x = \frac{\sqrt{2}}{2}$

$x^2 + x^2 = 1^2$

$2x^2 = 1$

$x^2 = \frac{1}{2}$

$x = \sqrt{\frac{1}{2}} = \frac{\sqrt{1}}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{\sqrt{2}}{2}$

On Unit Circle

$\sin\theta = y$ $\csc\theta = \dfrac{1}{y}$

$\cos\theta = x$ $\sec\theta = \dfrac{1}{x}$

$\tan\theta = \dfrac{y}{x}$ $\cot\theta = \dfrac{x}{y}$

ex: Find 6 trig function values of $\dfrac{11\pi}{6}$

$$\sin\frac{11\pi}{6} = -\frac{1}{2}$$

$$\cos\frac{11\pi}{6} = \frac{\sqrt{3}}{2}$$

$$\tan\frac{11\pi}{6} = \frac{-\frac{1}{2}}{\frac{\sqrt{3}}{2}} = -\frac{1}{2}\cdot\frac{2}{\sqrt{3}} = \frac{-1}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = -\sqrt{3}$$