

Trigonometry
Sine, Cosine, Tangent

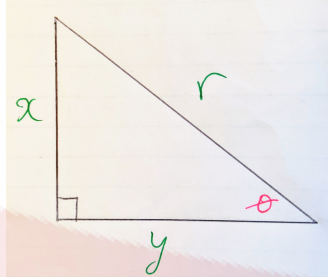
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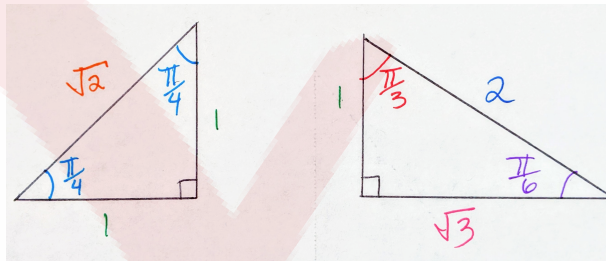
Sine, Cosine and Tangent

Let's consider the right angled triangle below.



We have the following trigonometric ratios,

$$\sin \theta = \frac{x}{r}, \quad \cos \theta = \frac{y}{r}, \quad \tan \theta = \frac{x}{y}$$



From left triangle we have the following trigonometric ratios:

$$\sin \frac{\pi}{4} = \frac{1}{\sqrt{2}}, \quad \cos \frac{\pi}{4} = \frac{1}{\sqrt{2}}, \quad \tan \frac{\pi}{4} = 1$$

From right triangle we have the following trigonometric ratios:

$$\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}, \quad \cos \frac{\pi}{3} = \frac{1}{2}, \quad \tan \frac{\pi}{3} = \frac{\sqrt{3}}{1}$$

$$\sin \frac{\pi}{6} = \frac{1}{2}, \quad \cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}, \quad \tan \frac{\pi}{6} = \frac{1}{\sqrt{3}}$$

Exercises

What is the sine, cosine and tangent of the following radian angles?

a) $\frac{\pi}{2}$

e) $\frac{\pi}{6}$

b) $-\pi$

f) $\frac{\pi}{3}$

c) 3π

g) $\frac{4\pi}{3}$

d) $\frac{\pi}{4}$

h) $\frac{7\pi}{6}$

i) $\frac{3\pi}{2}$

j) $\frac{11\pi}{6}$