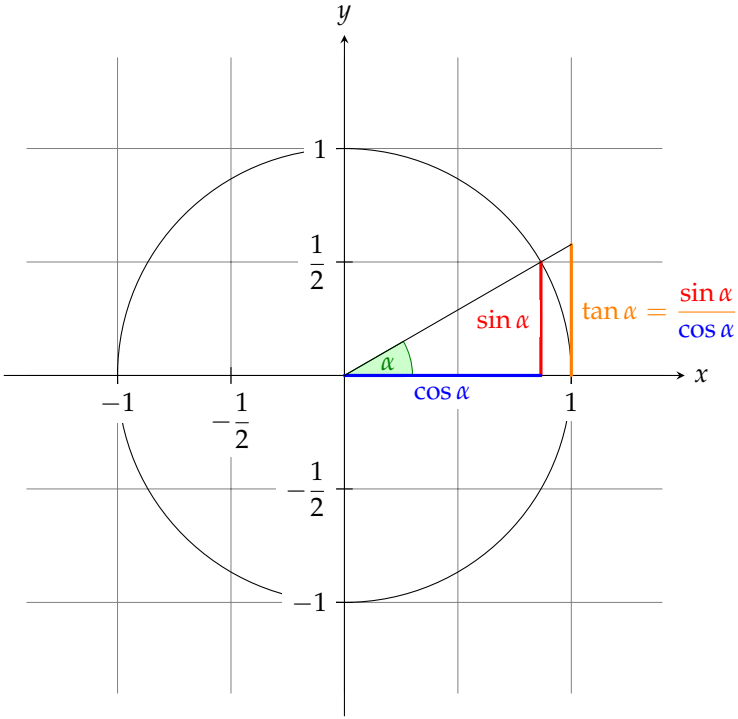

The angle α is 30° in the example ($\pi/6$ in radians). The $\sin\alpha$, which is the height of the red line

$$\sin\alpha = 1/2$$

By the Theorem of Pythagoras, we have $\cos\alpha + \sin\alpha = 1$. Thus the length of the blue line, which is the $\cos\alpha$, must be:

$$\cos\alpha = \sqrt{1 - 1/4} = \frac{1}{2}\sqrt{3}$$

This show that $\tan\alpha$, which is the height of the orange line, is

$$\tan\alpha = \frac{\sin\alpha}{\cos\alpha} = 1/\sqrt{3}$$