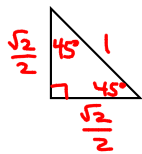
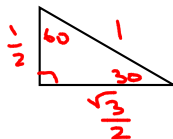


# Essential Reference Angles



$$\sin 45 = \frac{1/\sqrt{2}}{1} = \frac{1}{\sqrt{2}}$$

$$\cos 45 = \frac{1/\sqrt{2}}{1} = \frac{1}{\sqrt{2}}$$

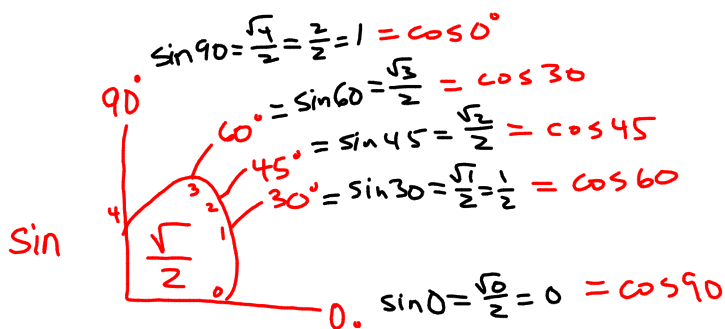


$$\sin 30 = \frac{1/2}{1} = \frac{1}{2}$$

$$\cos 30 = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2}$$

$$\sin 60 = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2}$$

$$\cos 60 = \frac{1/2}{1} = \frac{1}{2}$$



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

$$\tan 0 = \frac{0}{1} = 0$$

$$\tan 30 = \frac{1/2}{\sqrt{3}/2} = \frac{1}{\sqrt{3}} = \frac{\sqrt{3}}{3}$$

$$\tan 45 = \frac{\sqrt{2}/2}{\sqrt{2}/2} = 1$$

$$\tan 60 = \frac{\sqrt{3}/2}{1/2} = \sqrt{3}$$

$$\tan 90 = \frac{1}{0} = \text{undefined}$$

