

Name: _____

Key

Hour: _____

Date: _____

Finding Exact Trig Values Notes

$$\sin\theta = \frac{\text{opp}}{\text{hyp}}$$

SOH

$$\cos\theta = \frac{\text{adj}}{\text{hyp}}$$

CAH

$$\tan\theta = \frac{\text{opp}}{\text{adj}}$$

TOA

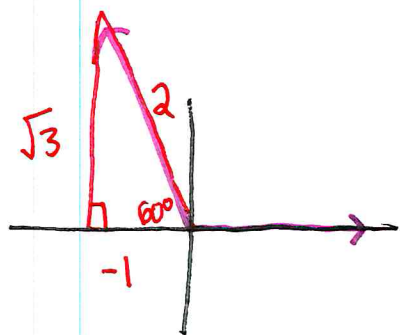
Steps for Finding Exact Trig Values:

- Determine reference angle
- Sketch reference triangle
- find ratios / simplify!

Examples: Find the exact value of sine, cosine, and tangent of the given angle. Include sketch and label triangle.

1) 120°

$$Q_{II}: 180^\circ - 120^\circ = 60^\circ$$



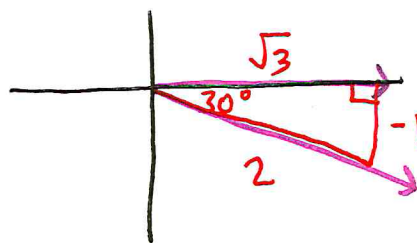
$$\sin(120^\circ) = \frac{\sqrt{3}}{2}$$

$$\cos(120^\circ) = -\frac{1}{2}$$

$$\tan(120^\circ) = \frac{\sqrt{3}}{-1} = -\sqrt{3}$$

2) 330°

$$Q_{IV}: 360^\circ - 330^\circ = 30^\circ$$



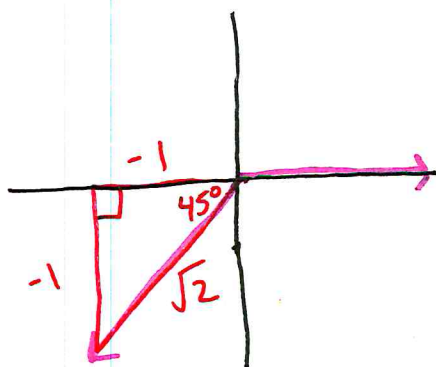
$$\sin(330^\circ) = -\frac{1}{2}$$

$$\cos(330^\circ) = \frac{\sqrt{3}}{2}$$

$$\tan(330^\circ) = \frac{-1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{-\sqrt{3}}{\sqrt{9}} = \frac{-\sqrt{3}}{3}$$

3) 225°

$$Q_{III}: 225^\circ - 180^\circ = 45^\circ$$



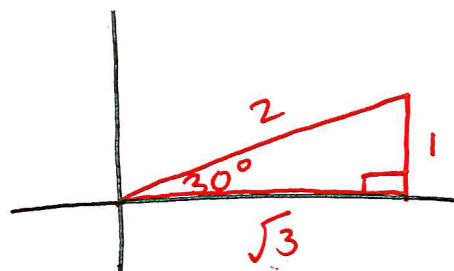
$$\sin(225^\circ) = \frac{-1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{-\sqrt{2}}{\sqrt{4}} = \frac{-\sqrt{2}}{2}$$

$$\cos(225^\circ) = \frac{-1}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{-\sqrt{2}}{\sqrt{4}} = \frac{-\sqrt{2}}{2}$$

$$\tan(225^\circ) = \frac{-1}{-1} = 1$$

4) 30°

$$Q_I: 30^\circ$$



$$\sin(30^\circ) = \frac{1}{2}$$

$$\cos(30^\circ) = \frac{\sqrt{3}}{2}$$

$$\tan(30^\circ) = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{\sqrt{9}} = \frac{\sqrt{3}}{3}$$