

Quiz 4

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Name: KEY

1. Find the following trigonometric numbers. Give exact answers.

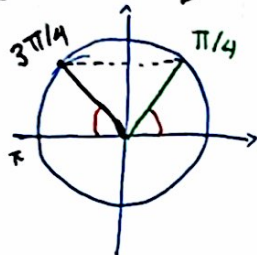
(a) $\cos 300^\circ = \frac{1}{2}$



$$300^\circ = 360^\circ - 60^\circ$$

$$\text{So } \cos 300^\circ = \cos 60^\circ = \frac{1}{2}$$

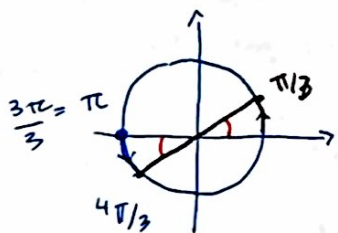
(b) $\sin \frac{3\pi}{4} = \frac{\sqrt{2}}{2}$



$$\frac{3\pi}{4} = \pi - \pi/4$$

$$\text{Thus } \sin \frac{3\pi}{4} = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2}$$

(c) $\tan \frac{4\pi}{3} = \frac{-\sqrt{3}/2}{-1/2} = \sqrt{3}$



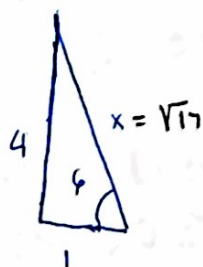
$$4\pi/3 = \pi + \pi/3 \quad \text{So}$$

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

$$\sin \frac{4\pi}{3} = -\sin \frac{\pi}{3} = -\sqrt{3}/2$$

2. For an angle θ in the Quadrant II we have $\tan \theta = -4$. Find $\sin \theta$.

Make a right triangle with an angle ϕ s.t. $\tan \phi = 4$



$$\sin \phi = \frac{4}{\sqrt{17}} = \frac{4\sqrt{17}}{17}$$

θ in $\Pi \Rightarrow \sin \theta$ is positive

$$\text{Thus } \boxed{\sin \theta = \frac{4\sqrt{17}}{17}}$$

$$x^2 = 1^2 + 4^2 \Rightarrow x^2 = 17 \Rightarrow x = \sqrt{17}$$