

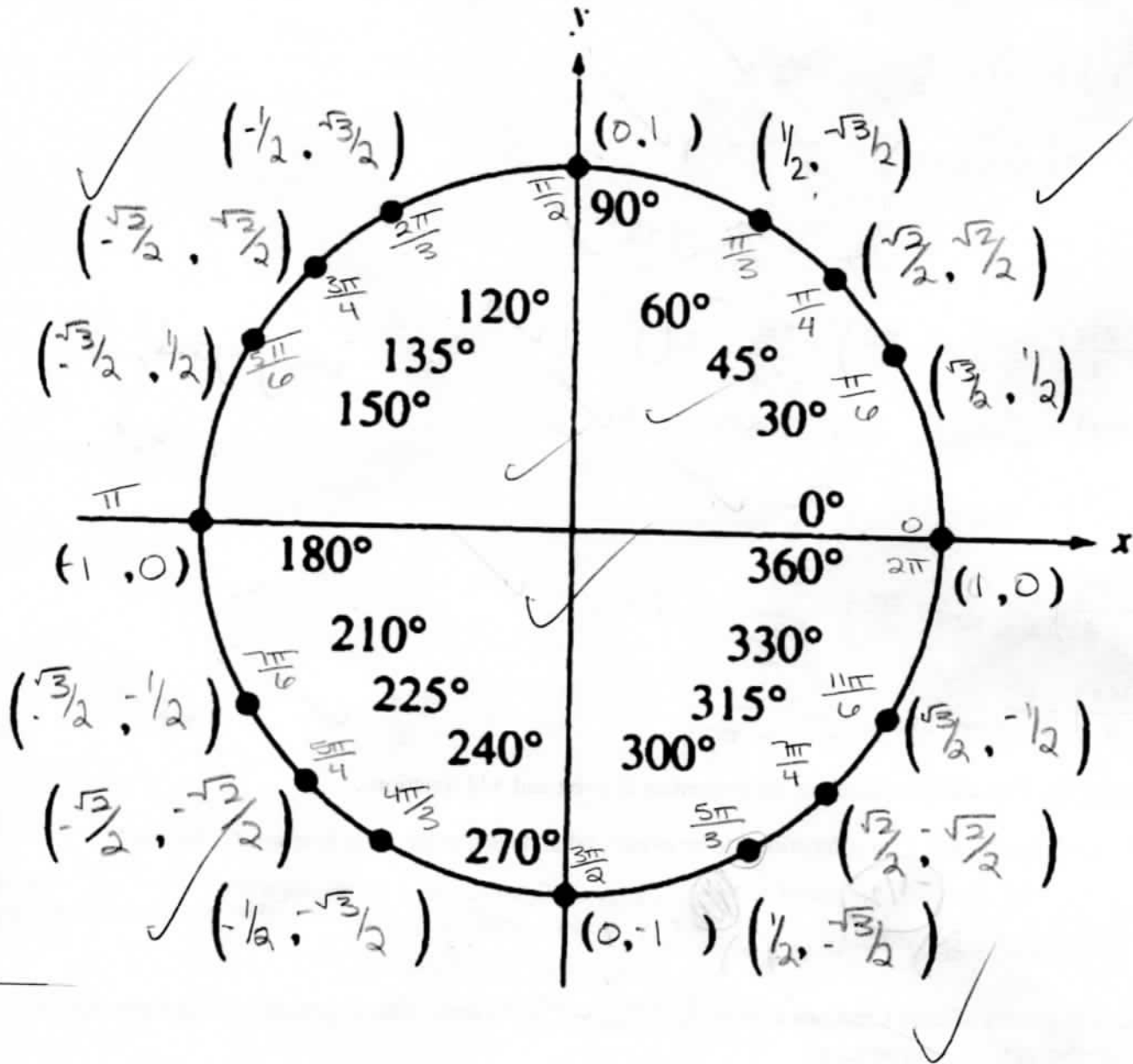
19.5/20

1800

good work!

Mathematics 1613: Trigonometry Quiz #5

Problem 17: Complete the unit circle with the coordinates and radian measure of each angle:



Problem 18: Find the following trigonometric values. Justify your answers by showing your work.

$$\cos\left(-\frac{7\pi}{3}\right) \cos\left(2\pi \cdot \frac{\pi}{3}\right) = 1/2 \checkmark$$

$$\sin\left(\frac{25\pi}{3}\right) \sin\left(8\pi \cdot \frac{\pi}{3}\right) = \sqrt{3}/2 \checkmark$$

$$\csc\left(\frac{\pi}{2} + 7\pi\right) \frac{1}{\sin\left(\frac{\pi}{2} + 7\pi\right)} = \frac{1}{-1} = -1 \checkmark$$

$$\sec\left(\frac{7\pi}{6}\right) \frac{1}{\cos\left(\frac{7\pi}{6}\right)} = \frac{1}{-\sqrt{3}/2} = -\frac{2}{\sqrt{3}} = -\frac{2\sqrt{3}}{3} \checkmark$$

$$\cot\left(-\frac{23\pi}{4}\right) = \frac{\cos\left(5\pi \cdot \frac{3\pi}{4}\right)}{\sin\left(5\pi \cdot \frac{3\pi}{4}\right)} = \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = -(-1) = 1 \checkmark$$

$$\csc(731\pi) = \frac{1}{\sin(\pi)} = \frac{1}{0} \text{ undefined } \checkmark$$

$$\cos\left(-\frac{3\pi}{4}\right) \cos\left(\frac{3\pi}{4}\right) = -\sqrt{2}/2 \checkmark$$

$$\tan\left(-\frac{27\pi}{4}\right) = \frac{\sin\left(6\pi \cdot \frac{3\pi}{4}\right)}{\cos\left(6\pi \cdot \frac{3\pi}{4}\right)} = \frac{-\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = -(-1) = 1 \checkmark$$

$$\csc\left(\frac{34\pi}{6}\right) \frac{1}{\sin\left(5\pi \cdot \frac{4\pi}{6}\right)} = \frac{1}{\sin\left(5\pi \cdot \frac{2\pi}{3}\right)} = \frac{1}{-\sqrt{3}/2} = -\frac{2\sqrt{3}}{3} \checkmark$$

very good!

Problem 19: This exercise involves the properties of even and odd functions.

- (1) What does it mean for a function f to be even? What does it mean for a function f to be odd?

EVEN	ODD
$-f(x) = f(x)$	$-f(x) \neq f(x)$

Even functions are symmetrical w/ respect to Y axis, odd functions are symmetrical w/ respect to the origin

- (2) The graphs of even functions exhibit Y axis symmetry. The graphs of odd functions exhibit Origin symmetry.

- (3) Which trigonometric functions are even? Which are odd?

$\cos \hat{=}$, \sec are even \checkmark

the other 4 are odd \checkmark

- (4) Using the even/odd properties of cosine and sine, prove that secant is even.

$$\cos(x) = \cos(-x)$$

$$\sec(-\theta) = \frac{1}{\cos(-\theta)} = \frac{1}{\cos\theta} = \sec\theta \checkmark$$

$$\sec = \frac{1}{\cos}$$

Secant will always be even as long as cos is