

CHAPTER 6 TEST: TRIGONOMETRIC FUNCTIONS

KNOW	APP	COMM	THINK	TOTAL
/16	/16	/5	/8	/45

Show all work to receive full marks. Leave answers in simplest exact form, unless otherwise stated.

1. True/False: State if each statement is true or false on the blank provided. **If the statement is false, circle the mistake(s) and correct the statement.** /6K,6A

_____ a) $\sin\left(\frac{\pi}{2}\right) + \cos(\pi) = 0$

_____ b) The period of the function $y = \sin(\pi x)$ is 2.

_____ c) The function $y = -3 \sin 2x + 1$ has an amplitude of -3 .

_____ d) The graph of $y = \sin\left(2x + \frac{\pi}{4}\right)$ has a phase shift of $-\frac{\pi}{4}$.

_____ e) The range of $y = \sec x$ is $\{y \in R \mid y \neq \pm 1\}$.

_____ f) The graphs of $f(x) = \sec x$ and $g(x) = \tan x$ have the same asymptotes at $x = k\pi, k \in I$

2. **Short Answers:**

/4K

a) What is the equivalent degree measure of $\frac{32\pi}{5}$ radians?

b) How many radians are in $\frac{7}{8}$ of a revolution?

c) A cosine function $y = -15 \cos(kt)$ has a period of $\frac{6}{5}$. Determine the value of k .

Leave answers in simplest exact form, unless otherwise stated.

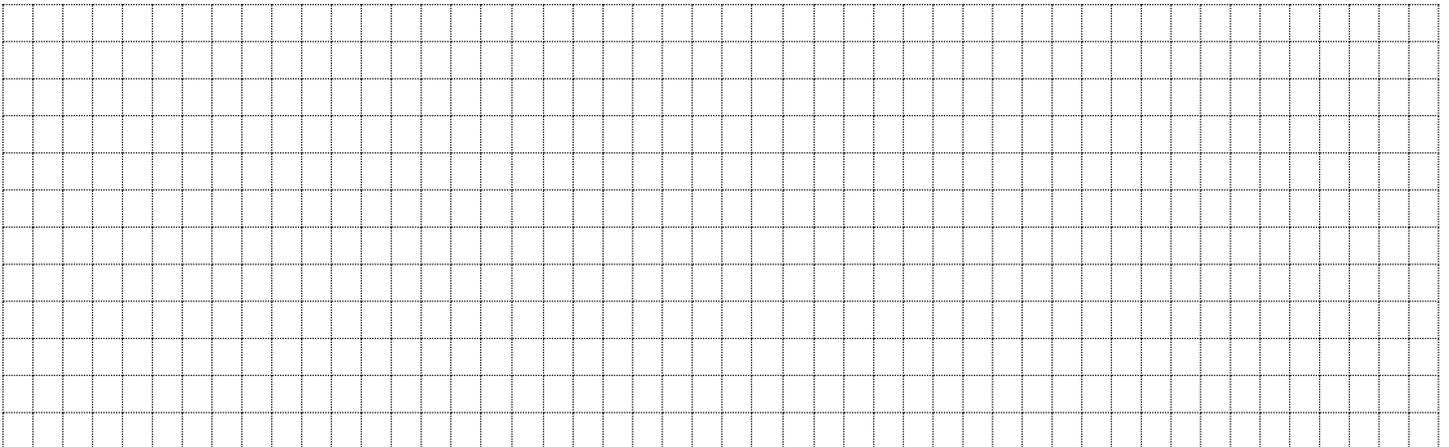
- d) State the maximum and minimum value of $y = 4 \sin(8\pi t) + 6.5$
max: _____ min: _____

3. Determine the exact length of an arc subtended by an angle of 145° with a radius of 10 cm. /2K,2T

For Question 4, properly label your graph and include all necessary key points.

4. Sketch two cycles of the function $f(x) = 3 \cos\left(\frac{1}{3}\left(x - \frac{\pi}{4}\right)\right) - 2$.

/3C,2K



Leave answers in simplest exact form, unless otherwise stated.

5. A bike tire with a diameter of 60 cm rotates 40 times in 1 minute.

/2T,3A

- What is the angle that the tire rotates through, in radians, for the first 30 seconds?
- Determine the angular velocity of the tire, in radians per second.
- Determine the distance travelled by a pebble that is trapped in the thread after 45 seconds.

6. Determine the exact value of each trigonometric ratio

/2C,4A

$$\cos \frac{5\pi}{4}$$

$$\csc \frac{5\pi}{6}$$

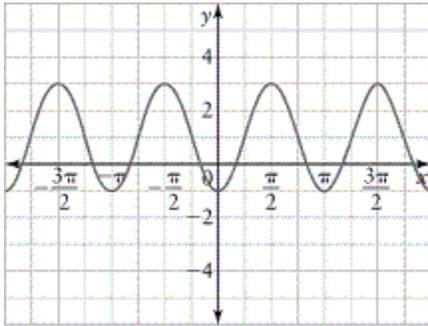
7. The terminal arm of an angle in standard position passes through the point (-4, -2). Find the radian value of the angle in the interval $[0, 2\pi]$, to the nearest hundredth.

/3A,1T

Leave answers in simplest exact form, unless otherwise stated.

8. Determine a sine and cosine equation for the following graph.

/2K,3T



Sine Equation: _____

Cosine Equation: _____