

Trigonometry Placement Exam Sample Test

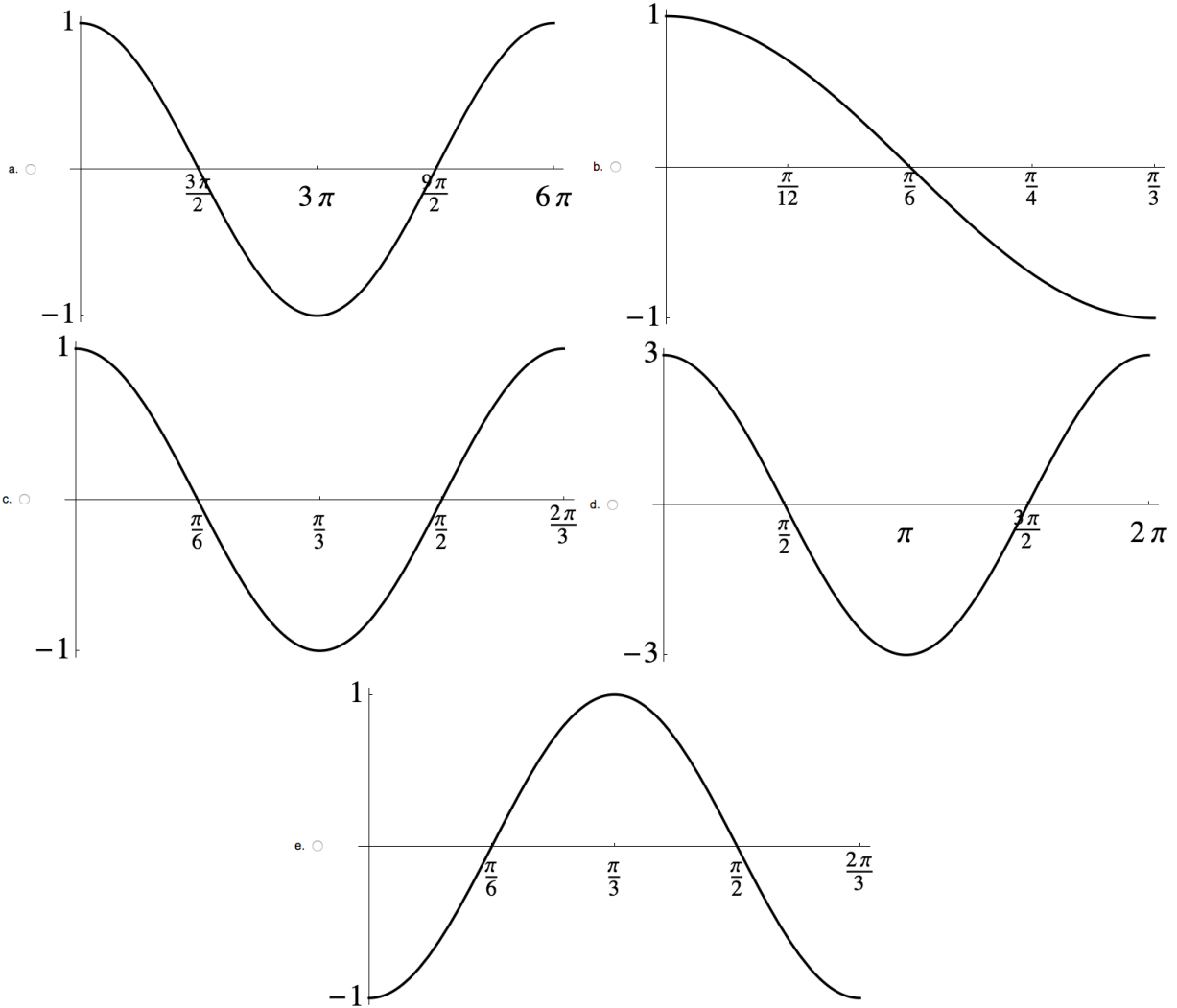
Question 1

For all real numbers x , $\cos^2(99x) + \sin^2(99x) =$

- a. 0
- b. 1
- c. $\cos(198x)$
- d. 99
- e. $\sin(198x)$

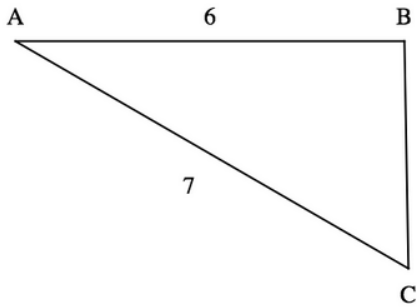
Question 2

Which of the following graphs best represents one cycle of the graph of $y = \cos(3x)$?



Question 3

If $m\angle A = 30^\circ$, then find the length of BC.



- a. $\sqrt{43}$
- b. $85 - 42\sqrt{3}$
- c. $\sqrt{85 + 42\sqrt{3}}$
- d. $\sqrt{85 - 42\sqrt{3}}$
- e. $\sqrt{85}$

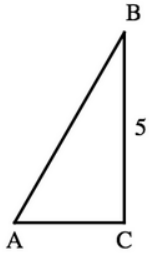
Question 4

Which of the following is larger than $\cos \frac{\pi}{6}$?

- a. $\cos \frac{\pi}{2}$
- b. $\cos \left(-\frac{\pi}{4}\right)$
- c. $\cos \frac{\pi}{4}$
- d. $\cos 0$
- e. $\cos \frac{\pi}{3}$

Question 5

If $m\angle A = 60^\circ$ and $m\angle B = 30^\circ$, then find the length of AC.



- a. $\frac{5}{4}$
- b. $5\sqrt{3}$
- c. 5
- d. $\frac{5}{\sqrt{3}}$
- e. $\frac{5\sqrt{3}}{4}$

Question 6

$$\arccos\left(\cos \frac{7}{4}\pi\right) =$$

- a. 1
- b. $-\frac{7\pi}{4}$
- c. $\frac{7\pi}{4}$
- d. $-\frac{3\pi}{4}$
- e. $\frac{\pi}{4}$

Question 7

$$\tan\left(\frac{5}{3}\pi\right) =$$

- a. $\frac{1}{2}$
- b. $-\sqrt{3}$
- c. $\sqrt{3}$
- d. $\frac{1}{\sqrt{3}}$
- e. $-\frac{1}{\sqrt{3}}$

Question 8

$$\sin(10\theta) =$$

- a. $2 \sin(5\theta) \cos(5\theta)$
- b. $10 \sin(\theta)$
- c. $\sin(10) \sin(\theta)$
- d. $4 \sin(5\theta) \cos(5\theta)$
- e. $\frac{1}{2} \sin(5\theta)$

Question 9

Convert 195° to radian measure.

- a. $\frac{13}{24}$
- b. $\frac{13}{12}$
- c. $\frac{13\pi}{12}$
- d. $\frac{13\pi}{24}$
- e. $\frac{13}{6\sqrt{2}}$

Question 10

If θ represents an acute angle and $\tan \theta = \frac{5}{8}$, then $\sin \theta =$

- a. 5
- b. 8
- c. $\frac{8}{\sqrt{89}}$
- d. $\frac{5}{\sqrt{89}}$
- e. $\frac{5}{\sqrt{39}}$

Question 11

$\cot \left(\frac{\pi}{2} - \theta \right) =$

- a. $2 \tan \theta$
- b. $1 - \cot \theta$
- c. ∞
- d. $\tan \theta$
- e. $\frac{1}{2} \tan \theta$

Question 12

For all real numbers x , $\cos (94 x) \cos (92 x) + \sin (94 x) \sin (92 x) =$

- a. $1 - 2 \sin^2 x$
- b. $\cos^2 x - \sin^2 x$
- c. $2 \cos^2 x - 1$
- d. All answers listed.
- e. $\cos (2 x)$

Question 13

In simplified form, $\frac{3 \cos x \sin x + 6 \cos^2 x}{6 \cos^2 x} =$

- a. $3 \cos x \sin x$
- b. $\frac{1}{2} \tan x$
- c. $\frac{1}{2} \cot x + 6 \cos^2 x$
- d. $\frac{1}{2} \cot x + 1$
- e. $\frac{1}{2} \tan x + 1$

Question 14

If $\cot^2 \theta = \frac{13}{8}$, then $\sec^2 \theta =$

- a. $\frac{21}{104}$
- b. $\frac{13}{5}$
- c. $\frac{21}{13}$
- d. $\frac{5}{13}$
- e. $\frac{13}{21}$

Question 15

Find the complete set of θ in the range $[0, 2\pi)$
that satisfy the equation $2 \cos^2 \theta + 3 \cos \theta = 2$.

a. $\left\{-\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

b. $\left\{-\frac{\pi}{3}\right\}$

c. $\left\{\frac{\pi}{3}, \frac{2\pi}{3}\right\}$

d. $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

e. $\left\{\frac{\pi}{6}, \frac{5\pi}{6}\right\}$