

What month is your birthday ?

What are the first 2 digits of your address ?

What are the last 2 digits of your zip code ?

What are the last 2 digits of your social security number ?

[IF YOU DO NOT HAVE A SOCIAL SECURITY NUMBER,
USE YOUR STUDENT ID NUMBER]

SCORE: ___ / 20 POINTS

NO CALCULATORS ALLOWED – FINAL ANSWERS MAY USE π **MULTIPLE CHOICE:** Which of the quantities $\tan 3$, $\cos 5$, and $\sin 6$ is/are negative ?

SCORE: ___ / 2 POINTS

- [A] none of the quantities are negative
 [B] all of the quantities are negative
 [C] only $\tan 3$ and $\sin 6$ are negative
 [D] only $\tan 3$ and $\cos 5$ are negative

LETTER OF CORRECT ANSWER:

C

Fill in the circular function values.

SCORE: ___ / 4 POINTS

$$\cot \frac{\pi}{3} = \sqrt{3}$$

$$\tan \frac{\pi}{4} = 1$$

$$\cos \frac{\pi}{2} = 0$$

$$\sin \frac{\pi}{6} = \frac{1}{2}$$

Find the circular function values.

SCORE: ___ / 3 POINTS

$$\sin \frac{7\pi}{6} = -\frac{1}{2}$$

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

$$\tan \frac{7\pi}{4} = -1$$

Find the exact value of s in $\left[\frac{3\pi}{2}, 2\pi\right]$ such that $\sin s = -\frac{\sqrt{2}}{2}$.

SCORE: ___ / 1 POINTS

$$2\pi - \frac{\pi}{4} = \frac{7\pi}{4}$$

Find the exact value of s in $\left[\pi, \frac{3\pi}{2}\right]$ such that $\cos s = -\frac{1}{2}$.

SCORE: ___ / 1 POINTS

$$\pi + \frac{\pi}{3} = \frac{4\pi}{3}$$

Convert 54° to radians. Simplify your answer. **SHOW ALL CALCULATIONS USED.**

SCORE: ___ / 1 POINTS

$$54^\circ \cdot \frac{\pi}{180} = \frac{3\pi}{10}$$

A thread is being pulled off a spool at the rate of 80 cm per sec. Find the radius of the spool if it makes 300 revolutions per minute. SHOW ALL CALCULATIONS USED.

SCORE: ___ / 3 POINTS

$$\frac{300 \text{ revs}}{\text{min}} * \frac{2\pi r}{1 \text{ rev}} = \frac{600\pi r}{\text{min}}$$

$$v = r\omega$$

$$r = \frac{v}{\omega} = \frac{80 \text{ cm}}{\text{sec}} * \frac{\text{min}}{600\pi r} * \frac{60 \text{ sec}}{1 \text{ min}}$$

$$= \frac{8}{\pi} \text{ cm} \quad \text{THE RADIUS IS } \frac{8}{\pi} \text{ cm}$$

If Mario eats $\frac{5\pi}{9}$ radians of a pizza with radius 6 inches, what is the area of the pizza he eats?

SCORE: ___ / 2 POINTS

SHOW ALL CALCULATIONS USED.

$$A = \frac{1}{2} r^2 \theta$$

$$= \frac{1}{2} (6 \text{ m})^2 \frac{5\pi}{9}$$

$$= \frac{1}{2} (36 \text{ m}^2) \frac{5\pi}{9}$$

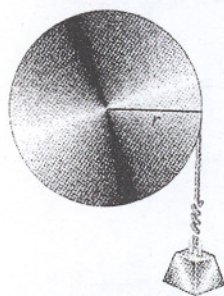
$$= 10\pi \text{ m}^2$$

MARIO EATS $10\pi \text{ m}^2$
OF PIZZA

Find the radius of the pulley below if a rotation of 54° raises the weight 12 cm.

SCORE: ___ / 3 POINTS

SHOW ALL CALCULATIONS USED.



$$54^\circ * \frac{\pi r}{180^\circ} = \frac{3\pi}{10} r$$

$$s = r\theta$$

$$r = \frac{s}{\theta}$$

$$= \frac{12 \text{ cm}}{\frac{3\pi}{10}}$$

$$= 12 \text{ cm} * \frac{10}{3\pi} = \frac{40}{\pi} \text{ cm}$$

THE RADIUS IS $\frac{40}{\pi} \text{ cm}$