Math 51 (7:30am – 8:20am)
Quiz 3
Mon May 4, 2009

SCORE: ___ / 20 POINTS

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]

NO CALCULATORS ALLOWED – FINAL ANSWERS MAY USE π

MULTIPLE CHOICE: Which of the quantities $\cos 3$, $\sin 4$, and $\tan 6$ is/are negative ? **SCORE: ___ / 2 POINTS**

[A] all of the quantities are negative
[B] only $\cos 3$ and $\sin 4$ are negative
[C] only $\cos 3$ and $\tan 6$ are negative
[D] none of the quantities are negative

LETTER OF CORRECT ANSWER: A 2

Fill in the circular function values. 1 EACH **SCORE: ___ / 4 POINTS**

$\cos\frac{\pi}{3} = \frac{1}{2}$ $\sec\frac{\pi}{2} =$ UNDEF $\sin\frac{\pi}{4} = \frac{\sqrt{2}}{2}$ $\tan\frac{\pi}{6} = \frac{\sqrt{3}}{3}$

Find the circular function values. 1 EACH **SCORE: ___ / 3 POINTS**

$\sin\frac{5\pi}{3} = -\frac{\sqrt{3}}{2}$ $\cos\frac{5\pi}{4} = -\frac{\sqrt{2}}{2}$ $\tan\frac{5\pi}{6} = -\frac{\sqrt{3}}{3}$

Find the exact value of s in $\left[\pi, \frac{3\pi}{2}\right]$ such that $\sin s = -\frac{\sqrt{3}}{2}$. **SCORE: ___ / 1 POINTS**

$\pi + \frac{\pi}{3} = \frac{4\pi}{3}$ 1

Find the exact value of s in $\left[\frac{3\pi}{2}, 2\pi\right]$ such that $\cos s = \frac{\sqrt{2}}{2}$. **SCORE: ___ / 1 POINTS**

$2\pi - \frac{\pi}{4} = \frac{7\pi}{4}$ 1

Convert 54° to radians. Simplify your answer. **SHOW ALL CALCULATIONS USED.** **SCORE: ___ / 1 POINTS**

3 $\frac{54^\circ}{180^\circ} * \frac{\pi^r}{10}$ ½ $= \frac{3\pi}{10}^r$ ½

A thread is being pulled off a spool at the rate of 70 cm per sec. Find the radius of the spool if it makes 210 revolutions per minute. **SHOW ALL CALCULATIONS USED.** **SCORE: ___ / 3 POINTS**

$$\frac{210 \text{ revs}}{\text{min}} * \frac{2\pi r}{\text{rev}} = \frac{420\pi r}{\text{min}}$$

$V = r\omega$

$r = \frac{V}{\omega} = \frac{70 \text{ cm}}{\text{sec}} * \frac{\text{min}}{420\pi r} * \frac{60 \text{ sec}}{1 \text{ min}}$ (1)

$= \frac{10}{\pi} \text{ cm}$ ($\frac{1}{2}$)

THE RADIUS IS $\frac{10}{\pi}$ cm ($\frac{1}{2}$)

If Mario eats $\frac{4\pi}{9}$ radians of a pizza with radius 6 inches, what is the area of the pizza he eats ? **SCORE: ___ / 2 POINTS**

SHOW ALL CALCULATIONS USED.

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

$= \frac{1}{2}(6 \text{ in})^2 \frac{4\pi}{9}$ (1)

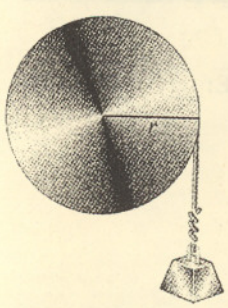
$= \frac{1}{2}(36 \text{ in}^2)\frac{4\pi}{9}$

$= 8\pi \text{ in}^2$ ($\frac{1}{2}$)

MARIO EATS $8\pi \text{ in}^2$ OF PIZZA ($\frac{1}{2}$)

Find the radius of the pulley below if a rotation of 63° raises the weight 30 cm. **SCORE: ___ / 3 POINTS**

SHOW ALL CALCULATIONS USED.



$63° \times \frac{\pi r}{180°} = \frac{7\pi}{20} r$ (1)

$s = r\theta$

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

$= \frac{30 \text{ cm}}{\frac{7\pi}{20}}$ (1)

$= 30 \text{ cm} * \frac{20}{7\pi} = \frac{600}{7\pi} \text{ cm}$ ($\frac{1}{2}$)

THE RADIUS IS $\frac{600}{7\pi}$ cm ($\frac{1}{2}$)