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 $\sin 3$, $\tan 5$, and $\cos 6$ is/are positive ? **SCORE: ___ / 2 POINTS**

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

LETTER OF CORRECT ANSWER: D

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

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

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

$\sin\frac{4\pi}{3} = -\frac{\sqrt{3}}{2}$ $\quad \cos\frac{3\pi}{4} = -\frac{\sqrt{2}}{2}$ $\quad \tan\frac{11\pi}{6} = -\frac{\sqrt{3}}{3}$

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

$\pi + \frac{\pi}{4} = \frac{5\pi}{4}$

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

$2\pi - \frac{\pi}{3} = \frac{5\pi}{3}$

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

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

3
10

If Mario eats $\frac{3\pi}{5}$ radians of a pizza with radius 10 inches, what is the area of the pizza he eats ? **SCORE: ___ / 2 POINTS**

SHOW ALL CALCULATIONS USED.

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

$= \frac{1}{2} (10 in)^2 \frac{3\pi}{5}$

$= \frac{1}{2} 100^{20} in^2 \frac{3\pi}{5}^{10}$

$= 30\pi\ in^2$

MARIO EATS $30\pi\ in^2$ OF PIZZA

A thread is being pulled off a spool at the rate of 60 cm per sec. Find the radius of the spool if it makes 200 revolutions per minute. **SHOW ALL CALCULATIONS USED.** **SCORE: ___ / 3 POINTS**

$200 \frac{revs}{min} * \frac{2\pi r}{1 rev} = \frac{400\pi r}{min}$

$v = r\omega$

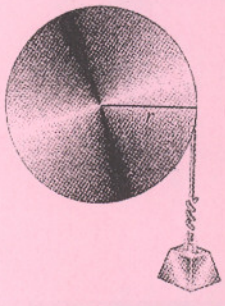
$r = \frac{v}{\omega} = \frac{60 cm}{sec} * \frac{min}{400\pi r} * \frac{60 sec}{1 min}$

$= \frac{9}{\pi} cm$

THE RADIUS IS $\frac{9}{\pi}$ cm.

Find the radius of the pulley below if a rotation of 72° raises the weight 20 cm. **SCORE: ___ / 3 POINTS**

SHOW ALL CALCULATIONS USED.



$^{2} 72° * \frac{\pi r}{180°_{5}} = \frac{2\pi r}{5}$

$s = r\theta$

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

$= \frac{20 cm}{\frac{2\pi}{5}}$

$= 20^{10} cm * \frac{5}{2\pi} = \frac{50}{\pi} cm$

THE RADIUS IS $\frac{50}{\pi}$ cm