Math 51 (9:30am – 10:20am)
Quiz 7
Fri Jun 5, 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

Fill in the blanks. **SCORE: ___ / 6 POINTS**

[a] The domain of $y = \sin^{-1} x$ is $[-1, 1]$

[b] The range of $y = \cos^{-1} x$ is $[0, \pi]$

[c] $\sin^{-1}\left(-\frac{\sqrt{3}}{2}\right) = -\frac{\pi}{3}$

[d] $\arccos\frac{\sqrt{2}}{2} = \frac{\pi}{4}$

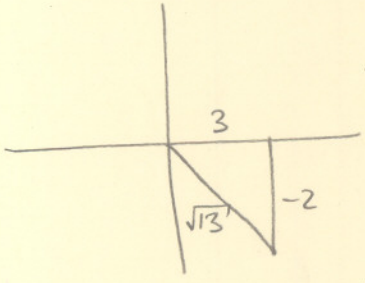
[e] $\cos^{-1}(-1) = \pi$

[f] $\arctan\sqrt{3} = \frac{\pi}{3}$

Solve $3\cos x = 3 - \sin^2 x$ in the interval $[0, 2\pi)$. **SCORE: ___ / 3 POINTS**

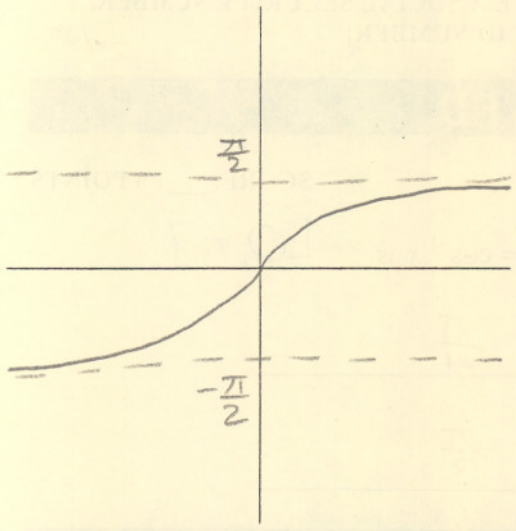
$$3\cos x = 3 - (1 - \cos^2 x)$$
$$0 = \cos^2 x - 3\cos x + 2$$
$$0 = (\cos x - 1)(\cos x - 2)$$
$$\cos x = 1 \quad \text{or} \quad \cancel{\cos x = 2}$$
$$x = 0$$

Find the exact value of $\sin\left(\tan^{-1}\left(-\frac{2}{3}\right)\right)$. **SCORE: ___ / 2 POINTS**



$$\sin\left(\tan^{-1}\left(-\tfrac{2}{3}\right)\right) = -\frac{2}{\sqrt{13}} = -\frac{2\sqrt{13}}{13}$$

Sketch the graph of $y = \tan^{-1} x$. Label all x- and y-coordinates shown in class, including all intercepts. **SCORE: ___ / 3 POINTS**



Solve $1 + 2\csc x = 5$ in the interval $[0, 2\pi)$. **SCORE: ___ / 3 POINTS**

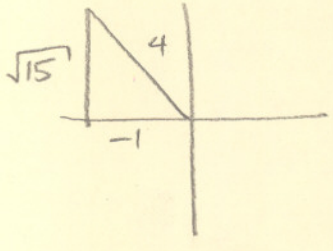
$2\csc x = 4$

$\csc x = 2$

$\sin x = \frac{1}{2}$

$x = \frac{\pi}{6}, \frac{5\pi}{6}$

Find the exact value of $\sin\left(2\arccos\left(-\frac{1}{4}\right)\right)$. **SCORE: ___ / 3 POINTS**



$\sin\left(2\arccos\left(-\frac{1}{4}\right)\right)$

$= 2\left(\frac{\sqrt{15}}{4}\right)\left(\frac{-1}{4}\right)$

$= -\frac{\sqrt{15}}{8}$