Math 49B (8:30am – 9:20am)
Quiz 3
Fri Oct 10, 2008

SCORE: ___ / 20 POINTS

What day of the month is your birthday ? ___ ___
What are the last 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

Solve the equation $\cos\frac{x}{2} = -\frac{\sqrt{3}}{2}$.

SCORE: 4 / 0 POINTS

$\frac{x}{2} = \frac{5\pi}{6} + 2n\pi$ OR $\frac{7\pi}{6} + 2n\pi$

$x = \frac{5\pi}{3} + 4n\pi$ OR $\frac{7\pi}{3} + 4n\pi$

Solve the equation $2\sin^2 x - \sin x - 1 = 0$ in the interval $[0, 2\pi)$.

SCORE: 5 / 0 POINTS

$(2\sin x + 1)(\sin x - 1) = 0$

$2\sin x + 1 = 0$ OR $\sin x - 1 = 0$

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

1 POINT EACH

$x = \frac{\pi}{2}, \frac{7\pi}{6}, \frac{11\pi}{6}$

Solve the equation $\tan^3 x = 3\tan x$.

SCORE: 6 / 0 POINTS

$\tan^2 x - 3\tan x = 0$

$\tan x(\tan^2 x - 3) = 0$

$\tan x = 0$ OR $\tan^2 x - 3 = 0$

$\tan x = \pm\sqrt{3}$

$x = 0 + n\pi$ OR $x = \frac{\pi}{3} + n\pi$ OR $x = \frac{2\pi}{3} + n\pi$

$x = \frac{n\pi}{3}$

Prove the identity $\frac{1}{1+\cancel{\cos x}\ \csc x} + \frac{1}{1+\sin x} = 1$.

SCORE: 5 / 0 POINTS

$\frac{1}{1+\csc x} + \frac{1}{1+\sin x}$

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

$= \frac{1}{1+\frac{1}{\sin x}} \cdot \frac{\sin x}{\sin x} + \frac{1}{1+\sin x}$

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

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

$= 1$