MATH 12 QUIZ : TRIG EQUATIONS

NAME_____ **DATE**_____ **BLOCK**___

1) Solve algebraically over the real numbers. (Find the general solution with exact values)

$2\cos^2 x + \cos x - 1 = 0$

$x =$ _____

2) Find all values of x *exactly* , where $0 < x < 2\pi$ which solve the equation:

$\tan x + 1 = \sec^2 x$

$x =$ _____

3) Solve for x to the nearest hundredth, where $0 \leq x < 2\pi$

$3\sin x - 2\csc x = 5$

$x =$ _____

4) Solve for x exactly over the real numbers:

$4\sin x\cos x = -\sqrt{3}$

$x =$ _____

5) Find all values of x, in general form, for which the expression:

$$\frac{\csc x}{\csc x - 1}$$ Is undefined

$x =$ _____

6) Solve : $\sec\theta + \cot\theta = 2,\ 0 < \theta < 2\pi$

A. 0.64 B. 0.93 C. 3.46, 5.13 D. 4.29, 5.97

MATH 12 QUIZ : TRIG EQUATIONS

NAME Key **DATE**_____ **BLOCK**___

1) Solve algebraically over the real numbers. (Find the general solution with exact values)

$2\cos^2 x + \cos x - 1 = 0$

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

$\cos x = 1/2 \quad \cos x = -1$

$x = \frac{\pi}{3}, \frac{5\pi}{3} \qquad x = \pi$

$x = \frac{\pi}{3} + 2\pi n, \frac{5\pi}{3} + 2\pi n, \pi + 2\pi n$

2) Find all values of x *exactly* , where $0 < x < 2\pi$ which solve the equation:

$\tan x + 1 = \sec^2 x$

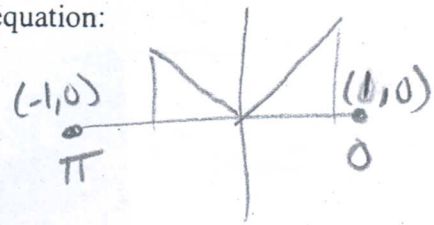
$\tan x + 1 = 1 + \tan^2 x$

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

$\tan x(\tan x - 1) = 0$

$\tan x = 0 \qquad \tan x = 1$

$x = 0, \pi \qquad x = \pi/4, 5\pi/4$



$\tan = \frac{y}{x} = \frac{\sin}{\cos}$

$x =$ _____

3) Solve for x to the nearest hundredth, where $0 \leq x < 2\pi$

$3\sin x - 2\csc x = 5$

$3\sin x - \frac{2}{\sin x} = 5$

$3\sin^2 x - 2 = 5\sin x$

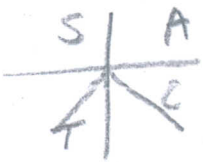
$3\sin^2 x - 5\sin x - 2 = 0$

$(3\sin x + 1)(\sin x - 2) = 0$

$\sin x = -1/3 \qquad \cancel{\sin x = 2}$ toobig!

$x = \sin^{-1}(1/3)$

$x = -0.340$



$2\pi - 0.340 = 5.94$

$\pi + 0.340 = 3.48$

$x = 3.48, 5.94$

4) Solve for x exactly over the real numbers:

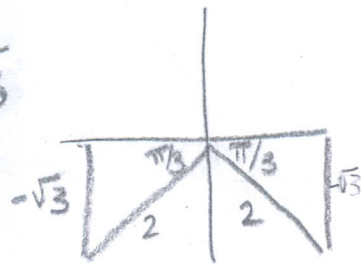
$4\sin x\cos x = -\sqrt{3}$

$2(2\sin x\cos x) = -\sqrt{3}$

$2\sin 2x = -\sqrt{3}$

$\sin 2x = -\sqrt{3}/2$

$2x = \sin^{-1}(-\sqrt{3}/2)$



$2x = \pi + \frac{\pi}{3} = \frac{4\pi}{3} \qquad x = \frac{4\pi}{6} = \frac{2\pi}{3}$

$2x = 2\pi - \frac{\pi}{3} = \frac{5\pi}{3} \qquad x = \frac{5\pi}{6}$

$x = \frac{2\pi}{3} + \pi n \qquad x = \frac{5\pi}{6} + \pi n$

$x = \frac{2\pi}{3} + \pi n, \frac{5\pi}{6} + \pi n$

5) Find all values of x, in general form, for which the expression:

$$\frac{\csc x}{\csc x - 1}$$ Is undefined

$$\frac{\frac{1}{\sin x}}{\frac{1}{\sin x} - 1}$$

Denominators $= 0$

$\sin x = 0$

$x = 0, \pi, 2\pi$

$= \pi n$

$\frac{1}{\sin x} - 1 = 0$

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

$\sin x = 1$

$x = \frac{\pi}{2} + 2\pi n$

$x =$ $\pi n, \pi/2 + 2\pi/n$

or $\frac{\pi}{2} + \pi n$

6) Solve : $\sec\theta + \cot\theta = 2$, $0 < \theta < 2\pi$

A. 0.64 B. 0.93 C. 3.46, 5.13 D. 4.29, 5.97

Graphing Calc.

$y_1 = 1 \div \cos x + 1 \div \tan x$

$y_2 = 2$