

Math 112: Quiz 7.4:

1. Solve the given Equations. Show your steps.

x1

a.  $2\cos(x) + 1 = 0$

\*  
 $\cos x = -\frac{1}{2}$

$$x = \frac{2\pi}{3} + 2k\pi + \frac{1}{2} \quad x = 120^\circ + n360^\circ$$

$$= \frac{4\pi}{3} + 2k\pi + \frac{1}{2} \quad = 240^\circ + n360^\circ$$

x2

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

\*  
 $\sqrt{\tan^2 x - 3}$

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

+1

$$x = \frac{\pi}{3} + k\pi + \frac{1}{2} \quad x = 60^\circ + n180^\circ$$

$$= \frac{2\pi}{3} + k\pi + \frac{1}{2} \quad = 120^\circ + n180^\circ$$

x3

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

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

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

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

$x = \frac{\pi}{6} + 2k\pi + \frac{1}{2} \quad x = \frac{3\pi}{2} + 2k\pi + \frac{1}{2}$

$= \frac{5\pi}{6} + 2k\pi + \frac{1}{2}$

$x = 30^\circ + n360^\circ$

$150^\circ + n360^\circ$

$270^\circ + n360^\circ$