Warm Up 3/2

1) $\sin\left(\frac{5\pi}{6}\right) = \frac{1}{2}$

2) $\tan x = -1$

$x \in [0, 2\pi]$

$\frac{3\pi}{4}, \frac{7\pi}{4}$

5.3 day 1 ex 1 & 2

Goal: Be able to solve trigonometric equations using algebraic techniques for values on the unit circle.

Recall:

Period of $\sin\theta = 2\pi$
$\cos\theta = 2\pi$
$\tan\theta = \pi$

Process:
1. Isolate the trigonometric function
2. Rewrite in terms of 1 trig f(x).
3. Solve for values on the unit circle
4. for all values - add the period (n) n is any integer

ex 1) Solve for all values of x

$3\tan^2 x - 4 = -3$

$3\tan^2 x = 1$

$\tan^2 x = \frac{1}{3}$

$\tan x = \pm\sqrt{\frac{1}{3}}$ $\quad \frac{\sqrt{1}}{\sqrt{3}}\left(\frac{\sqrt{3}}{\sqrt{3}}\right.$

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

2] $4\csc^2 x + 2 = 18$

$4\csc^2 x = 16$

$\csc^2 x = 4$

$\csc x = \pm 2$

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

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

$\frac{5\pi}{6} + 2\pi n$

$\frac{7\pi}{6} + 2\pi n$

$\frac{11\pi}{6} + 2\pi n$

y+]

① $5\tan^2 x - 15 = 0$

$5\tan^2 x = 15$

$\tan^2 x = 3$

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

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

② $4\sin x = 2\sin x + \sqrt{2}$

$-2\sin x \quad -2\sin x$

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

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

$x = \frac{\pi}{4} + 2\pi n, \quad \frac{3\pi}{4} + 2\pi n$

③ $\cos x \sin x = 2\sin x$

$\cos x \sin x - 2\sin x = 0$

$\sin x(\cos x - 2) = 0$

$\sin x = 0 \quad \cos x - 2 = 0$