Warm-up #6:
Solving Trig Equations

Ex. Solve: $[0, 2\pi)$

1. $\sqrt{3}\sin\theta = -\sin\theta\cot\theta$

$\sqrt{3}\sin\theta + \sin\theta\cot\theta = 0$

$\sin\theta(\sqrt{3} + \cot\theta) = 0$

$\sin\theta = 0$ $\quad \sqrt{3} + \cot\theta = 0$

$\theta = 0, \pi$ $\quad \cot\theta = -\sqrt{3}$

Extraneous $\quad \theta = \frac{5\pi}{6}, \frac{11\pi}{6}$

2. $-\sqrt{2}\csc\theta - 3\cot\theta = -\cot\theta$

$+\cot\theta \qquad +\cot\theta$

$-\sqrt{2}\csc\theta - 2\cot\theta = 0$

$\frac{-\sqrt{2}}{\sin} - \frac{2\cos\theta}{\sin\theta} = 0$

$(\sin\theta) \quad \frac{-\sqrt{2} - 2\cos\theta}{\sin\theta} = 0 \quad (\sin\theta)$

$-\sqrt{2} - 2\cos\theta = 0$

$-2\cos\theta = \sqrt{2}$

$\cos\theta = \frac{\sqrt{2}}{-2}$

$\theta = \frac{3\pi}{4}, \frac{5\pi}{4}$