

LT: Solve Trigonometric Functions

Part 1: Isolate the trig function

$$\text{Ex 1) } \sin x + 2 = 3$$

$$\underline{\quad -2 \quad -2 \quad}$$

$$\sin x = 1$$

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

$$\text{Ex 2) } \cot x = 2 \cot x$$

$$\underline{\quad -\cot x \quad -\cot x \quad}$$

$$0 = \cot x$$

$$\frac{\pi}{0} = \tan x$$

Undefined = $\tan x$

$$x = \frac{\pi}{2}, \frac{3\pi}{2}$$

You try: $1 + 2 \cos x = 0$

$$\underline{\quad -1 \quad -1 \quad}$$

$$2 \cos x = -1$$

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

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

Part 2: Collect Like Terms

$$\text{Ex 3) } \begin{array}{r} \text{CSC } x + 2 = -\text{CSC } x \\ + \text{CSC } x \quad + \text{CSC } x \end{array}$$

$$\frac{2\text{CSC } x + 2}{-2} = \frac{0}{-2}$$

$$\frac{2\text{CSC } x}{2} = \frac{-2}{2}$$

$$\text{CSC } x = -1$$

$$\text{SIN } x = -1$$

$$x = \frac{3\pi}{2}$$

$$\text{You Try: } \begin{array}{r} \text{COS } x + \sqrt{2} = -\text{COS } x \\ -\text{COS } x \quad -\text{COS } x \end{array}$$

$$\frac{\sqrt{2}}{-2} = \frac{-2\text{COS } x}{-2}$$

$$-\frac{\sqrt{2}}{2} = \text{COS } x$$

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

Part 3: Using Square Roots

$$\text{Ex 4) } \frac{3\tan^2 x}{3} = \frac{1}{3}$$

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

$$\tan x = \pm \frac{\sqrt{1}}{\sqrt{3}}$$

$$\tan x = \pm \frac{1 \cdot \sqrt{3}}{\sqrt{3} \cdot \sqrt{3}}$$

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

$$x = \frac{\pi}{6}, \frac{5\pi}{6}, \frac{7\pi}{6}, \frac{11\pi}{6}$$

$$\text{You Try: } \frac{\sec^2 x - 1}{+1 + 1} = 0$$

$$\sqrt{\sec^2 x} = \sqrt{1}$$

$$\sec x = \pm 1$$

$$\text{COS } x = \pm 1$$

$$x = 0, \pi$$