

Solve for  $x \in [0, 2\pi)$

10.  $\sec^2 x + \sqrt{3} \sec x - \sqrt{2} \sec x - \sqrt{6} = 0$

$\sec x (\sec x + \sqrt{3}) - \sqrt{2} (\sec x + \sqrt{3}) = 0$

$(\sec x + \sqrt{3})(\sec x - \sqrt{2}) = 0$

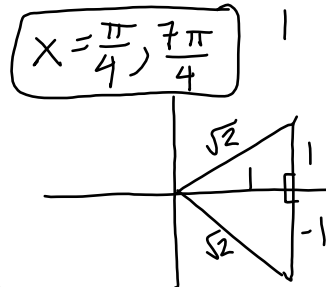
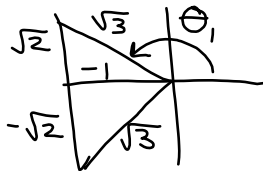
$\sec x + \sqrt{3} = 0$  or  $\sec x - \sqrt{2} = 0$

$\sec x = -\sqrt{3}$

$\sec x = \sqrt{2}$

$x = \sec^{-1}(-\sqrt{3})$   
 $= \cos^{-1}\left(\frac{-1}{\sqrt{3}}\right) \in \text{QII}$

&  $2\pi - \cos^{-1}\left(\frac{-1}{\sqrt{3}}\right) \in \text{QIII}$



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

14.  $2 \cos^2 x + 1 = -3 \cos x$

$2 \cos^2 x + 3 \cos x + 1 = 0$

Let  $u = \cos x$

$2u^2 + 3u + 1 = 0$

$(2u+1)(u+1) = 0$

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

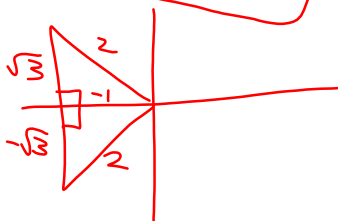
$2 \cos x + 1 = 0$  or  $\cos x + 1 = 0$

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

$\cos x = -1$

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

$x = \pi$



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

$$18. 4 \cos^3 x = 3 \cos x$$

$$4 \cos^3 x - 3 \cos x = 0$$

$$\cos x (4 \cos^2 x - 3) = 0$$

$$\cos x = 0$$

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

$$4 \cos^2 x - 3 = 0$$

$$\cos^2 x = \frac{3}{4}$$

$$\cos x = \pm \frac{\sqrt{3}}{2}$$

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

