§2.3 # 42

Slope function for $\cos^2(x) - \sin(x)$

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

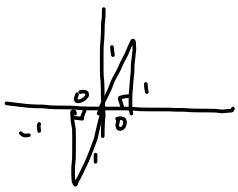
highs & lows for

$\cos(x)(-2\sin x - 1) = 0$

$\cos(x) = 0$ or $2\sin(x) = -1$

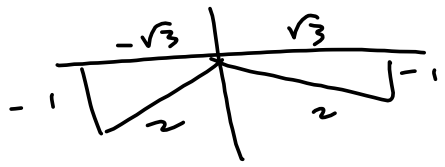
$\sin(x) = -\frac{1}{2}$

slope = 0 at highs & lows.



$90°, 270°$

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



$\frac{7\pi}{6}, \frac{11\pi}{6}$

$\frac{\pi}{2}, \frac{7\pi}{6}, \frac{3\pi}{2}, \frac{11\pi}{6}$

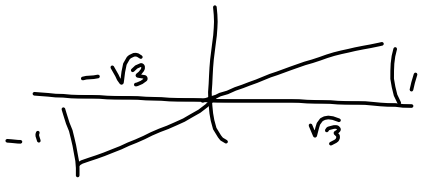
$9\tan^2(x) = 3\tan(x)$ NOTE: $\tan(0) = 0$ so

$3\tan^2(x) = 1$

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

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

$\tan(\pi) = \tan(0) = 0$



$\theta = \frac{\pi}{6}, \frac{7\pi}{6}, 0, \pi$

So $\underbrace{\frac{\pi}{6} + 2n\pi, \frac{7\pi}{6} + 2n\pi}$

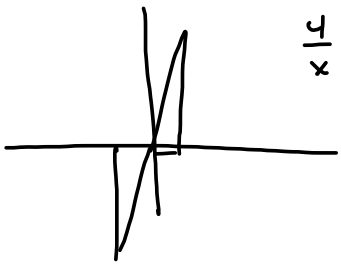
$\frac{\pi}{6} + n\pi$

$\underbrace{0 + 2n\pi, \pi + 2n\pi}$

$0 + n\pi = n\pi$

#47

$\cos\left(\frac{y}{x}\right) = 0$



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

$x = \frac{8}{\pi}$

$x =$

$\frac{y}{x} = \frac{\pi}{2} + 2n\pi = \frac{\pi + 4n\pi}{2}$

$\frac{x}{y} = \frac{2}{\pi + 4n\pi}$

$x = \frac{8}{\pi + 4n\pi}$

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

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

$x = \frac{8}{3\pi}$