

3.78
4

$$\sin x + \sin 3x + \sin 2x \geq |1 + \cos x + \cos 2x|$$

$$2\sin 2x \cos x + \sin 2x \geq |1 + \cos x + 2\cos^2 x - 1|$$

$$\sin 2x (2\cos x + 1) \geq |\cos x (1 + 2\cos x)|$$

$$-\sin 2x (2\cos x + 1) \leq \cos x (1 + 2\cos x) \leq \sin 2x (2\cos x + 1)$$

$$0 \in (2\cos x + 1)(\cos x + \sin 2x)$$

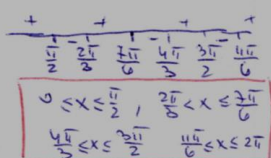
$$x = \pm \frac{2\pi}{3} + 2\pi k$$

$$\begin{aligned} \cos x + 2\sin x \cos x &= 0 \\ \cos x (1 + 2\sin x) &= 0 \\ x = \frac{\pi}{2} + \pi k & \quad x = -\frac{\pi}{6} + 2\pi k \\ & \quad x = \frac{7\pi}{6} + 2\pi k \end{aligned}$$

$$0 \in (2\cos x + 1)(\sin 2x - \cos x)$$

$$x = \pm \frac{2\pi}{3} + 2\pi k$$

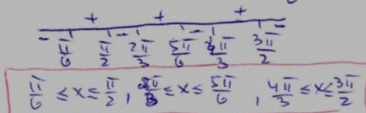
$$\begin{aligned} 2\sin x \cos x - \cos x &= 0 \\ \cos x (2\sin x - 1) &= 0 \\ x = \frac{\pi}{2} + \pi k & \quad x = \frac{\pi}{6} + 2\pi k \\ & \quad x = \frac{5\pi}{6} + 2\pi k \end{aligned}$$



1) 2) 3) 4) 5)

$$\frac{\pi}{6} \leq x \leq \frac{\pi}{2}$$

$$\frac{2\pi}{3} \leq x \leq \frac{5\pi}{6}$$



$$\frac{\pi}{6} \leq x \leq \frac{\pi}{2}$$

$$\frac{2\pi}{3} \leq x \leq \frac{5\pi}{6}$$

$$\frac{4\pi}{3} \leq x \leq \frac{3\pi}{2}$$