3.78
4

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

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

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

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

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

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

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

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

$x=\frac{\pi}{2}+\pi k$ $\quad$ $x=-\frac{\pi}{6}+2\pi k$, $\quad$ $x=\frac{7\pi}{6}+2\pi k$

$\frac{\pi}{2} \quad \frac{2\pi}{3} \quad \frac{7\pi}{6} \quad \frac{4\pi}{3} \quad \frac{3\pi}{2} \quad \frac{11\pi}{6}$

$0\le x\le\frac{\pi}{2}$, $\frac{2\pi}{3}<x\le\frac{7\pi}{6}$

$\frac{4\pi}{3}\le x\le\frac{3\pi}{2}$ $\quad$ $\frac{11\pi}{6}\le x\le 2\pi$

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

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

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

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

$x=\frac{\pi}{2}+\pi k$ $\quad$ $x=\frac{\pi}{6}+2\pi k$, $\quad$ $x=\frac{5\pi}{6}+2\pi k$

$\frac{\pi}{6} \quad \frac{\pi}{2} \quad \frac{2\pi}{3} \quad \frac{5\pi}{6} \quad \frac{4\pi}{3} \quad \frac{3\pi}{2}$

$\frac{\pi}{6}\le x\le\frac{\pi}{2}$, $\frac{2\pi}{3}\le x\le\frac{5\pi}{6}$, $\frac{4\pi}{3}\le x\le\frac{3\pi}{2}$

חיתוך הפתרונות

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

$\frac{2\pi}{3}\le x\le\frac{5\pi}{6}$ $\quad$ $\frac{4\pi}{3}\le x\le\frac{3\pi}{2}$