

4.24
4

רע

$\cot 2x$: $\sqrt{0}$ ל $\pi/2$ ו $3\pi/2$ ו $\pi/2$ ו $3\pi/2$ ו

$$2x \neq \pi k \rightarrow x = \frac{\pi k}{2}$$

$$\cot 2x \neq \csc 2x$$

אם \cot ו \csc ו \sec ו \csc ו

$$0 \neq \frac{\cot 2x}{\csc 2x} - \csc 2x = \cos 2x \left(\frac{1}{\sin 2x} - 1 \right)$$

$$0 \neq \csc 2x \left(\frac{1 - \sin 2x}{\sin 2x} \right)$$

↓

$$2x \neq \frac{\pi}{2} + \pi k$$

$$x \neq \frac{\pi}{4} + \frac{\pi k}{2}$$

↓

$$\sin 2x \neq 1$$

$$2x \neq \frac{\pi}{2} + 2\pi k$$

$$x \neq \frac{\pi}{4} + \pi k$$

$x \neq \frac{\pi}{4} k$ כל $\pi/4$ ו $3\pi/4$ ו $5\pi/4$ ו $7\pi/4$ ו

יד

$$f(x) < 2$$

$$2 > \frac{3(\cos 2x + \cot 2x)}{\cot 2x - \csc 2x} - 2\sin 2x$$

$$2 > \frac{3(\csc 2x \sin 2x + \cot 2x)}{\cot 2x - \csc 2x} - 2\sin 2x$$

$$2 > \frac{3(\csc 2x (\sin 2x + 1))}{\cos 2x (1 - \sin 2x)} - 2\sin 2x$$

$$0 > \frac{3\sin 2x + 3 - 2\sin 2x + 2\sin^2 2x}{1 - \sin 2x} - 2$$

$$0 > \frac{\sin 2x + 3 + 2\sin^2 2x - 2 + 2\sin 2x}{1 - \sin 2x}$$

$$0 > \frac{2\sin^2 2x + 3\sin 2x + 1}{1 - \sin 2x}$$

$$0 > \frac{(\sin 2x + 1)(\sin 2x + 1)}{1 - \sin 2x}$$

$$2\sin 2x + 1 = 0$$

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

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

$$x = -\frac{\pi}{12} + \pi k$$

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

$$x = \frac{7\pi}{12} + \pi k$$

$$\sin 2x + 1 = 0$$

$$\sin 2x = -1$$

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

$$x = \frac{3\pi}{4} + \pi k$$

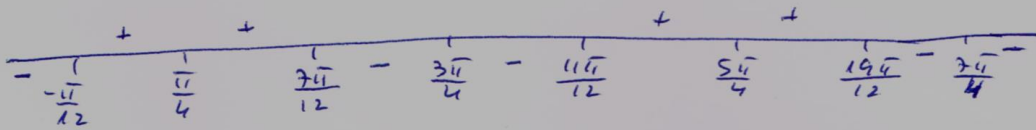
$$1 - \sin 2x = 0$$

$$\sin 2x = 1$$

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

$$\boxed{x = \frac{\pi}{4} + \pi k}$$

$x = \frac{\pi}{4} + \pi k \leftarrow \cos 2x, \sin 2x$ (י) (3) (3) (2) פונקציות הן זהות
 פונקציות אלו הן זהות $x = \frac{\pi}{4} + \pi k$



$$\pi k + \frac{7\pi}{12} < x < \frac{3\pi}{4} + \pi k$$

$$\pi k + \frac{5\pi}{4} < x < \frac{11\pi}{12} + \pi k$$

פונקציות אלו