

Disequazioni goniometriche

1) $2\sin x \cos^2 x - \cos^2 x - 2\sin x \cos x + \cos x \geq 0$

$$S = \bigcup_{k \in \mathbb{Z}} \left[-\frac{\pi}{2} + 2k\pi; \frac{\pi}{6} + 2k\pi \right] \cup \left[\frac{\pi}{2} + 2k\pi; \frac{5\pi}{6} + 2k\pi \right].$$

2) $\frac{\cos x - \sin(2x)}{1 - 4\sin^2 x} < 0$, con $0 \leq x \leq 2\pi$

$$S = \left] \frac{\pi}{2}; \frac{5\pi}{6} \right[\cup \left] \frac{5\pi}{6}; \frac{7\pi}{6} \right[\cup \left] \frac{3\pi}{2}; \frac{11\pi}{6} \right[.$$

3) $\frac{2}{\sin x} - \frac{3}{\cos^2 x} \geq 0$, con $0 \leq x \leq 2\pi$

$$S = \left] 0; \frac{\pi}{6} \right] \cup \left[\frac{5\pi}{6}; \pi \right[.$$

4) $\frac{\sin(5x) + \sin(3x)}{\sin(4x)} > 0$, con $x \in \mathbb{R}$.

$$S = \left\{ x \in \mathbb{R} \mid \left(-\frac{\pi}{2} + 2k\pi < x < \frac{\pi}{2} + 2k\pi \right) \wedge \left(x \neq \pm \frac{\pi}{4} + 2k\pi \right) \wedge (x \neq 2k\pi), k \in \mathbb{Z} \right\}$$

5) $\cos(5x) - \cos(7x) + \sin(6x) < 0$, con $0 \leq x \leq 2\pi$

$$S = \left] \frac{\pi}{6}; \frac{\pi}{3} \right[\cup \left] \frac{\pi}{2}; \frac{2\pi}{3} \right[\cup \left] \frac{5\pi}{6}; \pi \right[\cup \left] \frac{4\pi}{3}; \frac{3\pi}{2} \right[\cup \left] \frac{5\pi}{3}; \frac{11\pi}{6} \right[\cup \left] \frac{11\pi}{6}; 2\pi \right[$$