

### Elementi di Matematica - Esercizi - 25/11/2003

Risolvere le seguenti equazioni e disequazioni ( $\cot x = \frac{\cos x}{\sin x}$ ,  $\tan x = \frac{\sin x}{\cos x}$ ):

$$(1) \cot^2 x + \sqrt{3} \cot x = 0$$

$$(2) \sin 2x = 1$$

$$(3) \sin x \cos x + \sqrt{3} \cos^2 x - \sqrt{3} = 0$$

$$(4) \cot x + \sqrt{3} < 0$$

$$(5) 4 \cos^2 x - 3 < 0$$

$$(6) \tan^2 x - \tan x > 0$$

$$(7) 2 \sin^2 x - \cos x > 1$$

$$(8) \frac{2 \sin x - 1}{\cos x} > 0$$

$$(9) |\cos x| + \sin x = 0$$

$$(10) |\sin x| - \cos x > 0$$

$$(11) \tan^2 x + \cos(2x) = 1$$

$$(12) \sqrt{2 \cos x - 1} = \cos x$$

*Soluzioni:* ( $k \in \mathbb{Z}$ )

$$(1) \pi/2 + k\pi, 5\pi/6 + k\pi$$

$$(2) \pi/4 + k\pi$$

$$(3) k\pi, \pi/6 + k\pi$$

$$(4) (5\pi/6 + k\pi, \pi + k\pi)$$

$$(5) (\pi/6 + k\pi, 5\pi/6 + k\pi)$$

$$(6) (\pi/4 + k\pi, \pi/2 + k\pi), (\pi/2 + k\pi, \pi + k\pi)$$

$$(7) (\pi/3 + 2k\pi, \pi + 2k\pi), (-\pi + 2k\pi, -\pi/3 + 2k\pi)$$

$$(8) (\pi/6 + 2k\pi, \pi/2 + 2k\pi), (5\pi/6 + 2k\pi, 3\pi/2 + 2k\pi)$$

$$(9) 5\pi/4 + 2k\pi, 7\pi/4 + 2k\pi$$

$$(10) \pi/4 + 2k\pi < x < 7\pi/4 + 2k\pi$$

$$(11) k\pi, \pi/4 + k\pi/2$$

$$(12) 2k\pi$$