

### 35. ESERCIZI SULLE EQUAZIONI GONIOMETRICHE

Determina le soluzioni delle seguenti equazioni nell'intervallo  $[0, 2\pi]$

$$1) (\sin x - 5)(5\sin x - 1) = 0$$

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

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

$$4) (\sin x - 1)(\sin x + \sqrt{3}) = 0$$

$$5) (\tan x - 1)(\tan x + \sqrt{3}) = 0$$

$$6) 2\cos x(2\sin x + \sqrt{2}) = 0$$

$$7) \sin x \cos x = \sin^2 x$$

$$8) 2\cos^2 x - \cos x - 3 = 0$$

$$9) 8\sin^4 x = \sin x$$

$$10) 2\sin^2 x + \cos x = 1$$

$$11) \tan x = \frac{(\tan x + 1)(\tan x - 1)}{2}$$

$$12) \cot^2 x = \frac{1}{\sin^2 x}$$

$$13) \sin 2x = \sin x$$

$$14) \sin 7x - \sin x = 0$$

$$15) 2\sin^2 3x = \sin 3x + 1 = 0$$

$$16) \cos 4x + \cos 2x = 0$$

$$17) \tan 8x \cdot \tan x = 0$$

$$18) \sqrt{3}\sin x + \cos x = 2$$

$$19) \sin 3x = \cos 2x$$

$$20) \sin 2x - 2\sin x - 2\cos x + 2 = 0$$

$$21) \sin\left(\frac{\pi}{3} - x\right) - \sin\left(\frac{\pi}{6} + x\right) = \frac{\sqrt{2}}{2}$$

$$22) \sin 5x + \sin x = \sin 3x$$

$$23) 2\sin x + 5\cos x - 2 = 0$$

$$24) 2\cos^2 2x + \cos 2x - 1 = 0$$

$$25) \cos 2x + 2\sin^2 \frac{x}{2} = 1$$

$$26) 8\sin^2 x(\sin^2 x - \cos^2 x) = 3$$

**RISPOSTE**

- 1)  $\arcsin \frac{1}{5}, \pi - \arcsin \frac{1}{5}$       2)  $\frac{5}{12}\pi, \frac{17}{12}\pi$
- 3)  $0, \frac{\pi}{2}, \pi, \frac{3}{2}\pi, 2\pi$       4)  $\frac{\pi}{2}$
- 5)  $\frac{\pi}{4}, \frac{2}{3}\pi, \frac{5}{4}\pi, \frac{5}{3}\pi$       6)  $\frac{\pi}{2}, \frac{5}{4}\pi, \frac{3}{2}\pi, \frac{7}{4}\pi$
- 7)  $0, \frac{\pi}{4}, \pi, \frac{5}{4}\pi, 2\pi$       8)  $\pi$
- 9)  $0, \frac{\pi}{6}, \frac{5}{6}\pi, \pi, 2\pi$       10)  $0, \frac{2}{3}\pi, \frac{4}{3}\pi, 2\pi$
- 11)  $\frac{3}{8}\pi, \frac{7}{8}\pi, \frac{11}{8}\pi, \frac{15}{8}\pi$       12) *imposs.*
- 13)  $0, \frac{\pi}{3}, \pi, \frac{5}{3}\pi, 2\pi$
- 14)  $0, \frac{\pi}{8}, \frac{\pi}{3}, \frac{3}{8}\pi, \frac{5}{8}\pi, \frac{2}{3}\pi, \frac{7}{8}\pi, \pi, \frac{9}{8}\pi, \frac{4}{3}\pi, \frac{11}{8}\pi, \frac{13}{8}\pi, \frac{5}{3}\pi, \frac{15}{8}\pi, 2\pi$
- 15)  $\frac{\pi}{6}, \frac{7}{18}\pi, \frac{11}{18}\pi, \frac{5}{6}\pi, \frac{19}{18}\pi, \frac{23}{18}\pi, \frac{3}{2}\pi, \frac{31}{18}\pi, \frac{35}{18}\pi$
- 16)  $\frac{\pi}{6}, \frac{\pi}{2}, \frac{5}{6}\pi, \frac{7}{6}\pi, \frac{3}{2}\pi, \frac{11}{6}\pi$
- 17)  $0, \frac{\pi}{8}, \frac{\pi}{4}, \frac{3}{8}\pi, \frac{5}{8}\pi, \frac{3}{4}\pi, \frac{7}{8}\pi, \pi, \frac{9}{8}\pi, \frac{5}{4}\pi, \frac{11}{8}\pi, \frac{13}{8}\pi, \frac{7}{4}\pi, \frac{15}{8}\pi, 2\pi$
- 18)  $\frac{\pi}{3}$
- 19)  $\frac{\pi}{10}, \frac{\pi}{2}, \frac{9}{10}\pi, \frac{13}{10}\pi, \frac{17}{10}\pi$
- 20)  $0, \frac{\pi}{2}, 2\pi$
- 21)  $\frac{5}{4}\pi, \frac{23}{12}\pi$
- 22)  $0, \frac{\pi}{6}, \frac{\pi}{3}, \frac{2}{3}\pi, \frac{5}{6}\pi, \pi, \frac{7}{6}\pi, \frac{4}{3}\pi, \frac{5}{3}\pi, \frac{11}{6}\pi, 2\pi$
- 23)  $\frac{\pi}{2}, 2\pi - 2\arctg \frac{3}{7}$
- 24)  $\frac{\pi}{6}, \frac{\pi}{2}, \frac{5}{6}\pi, \frac{7}{6}\pi, \frac{3}{2}\pi, \frac{11}{6}\pi$
- 25)  $0, \frac{2}{3}\pi, \frac{4}{3}\pi, 2\pi$
- 26)  $\frac{\pi}{3}, \frac{2}{3}\pi, \frac{4}{3}\pi, \frac{5}{3}\pi$