

Esercizi di riepilogo sulle equazioni

Risolvere le seguenti equazioni.

299 $2\text{sen}^2 \frac{x}{2} + \cos x = 3\text{tg}^2 x$

300 $\text{sen} x \text{tg} \frac{x}{2} - \cos x = 0$

301 $\frac{1 - \cos 2x}{2\text{sen} x} + \cos x = 1$

302 $2 \text{sen}^2 2x - 6 \text{sen} x \cos x + 1 = 0$

303 $\text{tg}^2 x + 2 \cos x - 2 = 0$

304 $\text{ctg}^2 x - 8 \text{sen} x + 1 = 0$

$$x = \pm \frac{\pi}{6} + k\pi$$

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

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

$$x = \frac{\pi}{4} + k\pi; x = \frac{\pi}{12} + k\pi; x = \frac{5}{12}\pi + k\pi$$

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

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

$$305 \cos\left(3x - \frac{\pi}{3}\right) + \operatorname{sen}\left(\frac{5}{6}\pi - 3x\right) + 1 = 0$$

$$x = -\frac{\pi}{9} + k \cdot \frac{2\pi}{3}; \quad x = \frac{\pi}{3} + k \cdot \frac{2\pi}{3}$$

$$306 \operatorname{sen}\left(x + \frac{2}{3}\pi\right) + \cos\left(\frac{\pi}{6} - x\right) - \operatorname{sen} x - 1 = 0$$

$$x = \frac{\pi}{6} + k2\pi; \quad x = -\frac{\pi}{2} + k \cdot 2\pi$$

$$307 \operatorname{sen}^2 x + (1 - \sqrt{3})\operatorname{sen} x \cdot \cos x - \sqrt{3} \cos^2 x = 0$$

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

$$308 \operatorname{sen} x (\operatorname{tg} x - 1) = \sqrt{3}(\operatorname{sen} x - \cos x)$$

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

$$309 2 \cos^2 2x - \operatorname{sen} 4x = 0$$

$$x = \frac{\pi}{4} + k\frac{\pi}{2}; \quad x = \frac{\pi}{8} + k\frac{\pi}{2}$$

$$310 3 \operatorname{ctg}^2 x + 1 = \frac{3 \cos x}{\cos^2 x - 1}$$

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

$$311 \frac{\operatorname{sen} 2x + 1}{\operatorname{sen} x + \cos x} = \frac{\sqrt{3} - 1}{2}$$

$$x = -\frac{\pi}{6} + 2k\pi; \quad x = \frac{2}{3}\pi + 2k\pi$$

$$312 \frac{3}{\cos x + 1} - \frac{3}{\cos x - 1} = 8$$

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

$$313 \frac{1 - \cos 2x}{\operatorname{sen} x} = \frac{\operatorname{sen} 2x}{1 + \cos 2x}$$

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

$$314 \frac{1 - \cos 2x}{\operatorname{sen} x} - \frac{1 + \cos 2x}{\cos x} = 0$$

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

$$315 \operatorname{sen}^2 2x - 4 \operatorname{sen} 2x \cos 2x - 3 \cos^2 2x - 1 = 0$$

$$x = \frac{\pi}{4} + k\frac{\pi}{2}; \quad x = -\frac{\pi}{8} + k\frac{\pi}{2}$$

$$316 3 \operatorname{sen}^2 2x - \sqrt{3} \operatorname{sen} 2x \cos 2x + 2 \cos^2 2x - 3 = 0$$

$$x = \frac{5}{12}\pi + k\frac{\pi}{2}; \quad x = \frac{\pi}{4} + k\frac{\pi}{2}$$

$$317 \operatorname{tg}\left(\frac{\pi}{3} + x\right) = \operatorname{tg}\left(\frac{\pi}{3} - x\right) + 4$$

$$x = \frac{3}{4}\pi + k\pi; \quad x = \operatorname{arctg} \frac{1}{3}$$

$$318 \operatorname{sen}\left(\frac{2}{3}\pi - 2x\right) + \cos 2x = \frac{1}{2}$$

$$x = \frac{\pi}{4} + k\pi; \quad x = \frac{5}{6}\pi + k\pi$$

$$319 \operatorname{tg}\left(\frac{3}{2}\pi - x\right) = 1 - \operatorname{ctg}\left(\frac{\pi}{4} + x\right)$$

$$x = \frac{\pi}{4} + k\pi; \quad x = \operatorname{arctg}(-2)$$

$$320 \frac{\operatorname{sen} 2x}{\operatorname{sen} x} + \cos\left(x - \frac{4}{3}\pi\right) = \sqrt{3} \operatorname{sen} x$$

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

$$321 \operatorname{sen}\left(\frac{\pi}{6} + x\right) \cos\left(\frac{\pi}{3} + x\right) - \operatorname{sen} 2x = \frac{3}{2} \cos^2 x$$

$$x = -\frac{\pi}{4} + k\pi; \quad x = \operatorname{arctg}\left(-\frac{5}{3}\right)$$

$$322 3 \operatorname{sen}\left(\frac{\pi}{3} - 2x\right) + 2 \operatorname{sen} x \cos x + \cos\left(\frac{5}{6}\pi + 2x\right) = 1$$

$$x = \frac{\pi}{12} + k\pi; \quad x = -\frac{\pi}{4} + k\pi$$

$$323 \quad \frac{1}{2(1+\operatorname{ctg}^2 x)} - \cos^2\left(\frac{7}{4}\pi + x\right) = \cos\frac{2}{3}\pi$$

$$324 \quad \operatorname{sen} x \cos(3\pi - x) + \cos\left(\frac{\pi}{4} + x\right) \operatorname{sen}\left(\frac{\pi}{4} - x\right) = 0$$

$$325 \quad \operatorname{tg} 2x + \operatorname{tg}\left(\frac{\pi}{4} - x\right) = 2$$

$$326 \quad \operatorname{ctg}\left(x - \frac{\pi}{3}\right) + 2\operatorname{sen}\left(x + \frac{\pi}{6}\right) = 0$$

$$327 \quad \cos 2x + 2\operatorname{sen}^2\left(x + \frac{3}{4}\pi\right) = 2$$

$$328 \quad \cos^2\left(\frac{11}{6}\pi - x\right) + \frac{\sqrt{3}}{4}\operatorname{sen} 2x = \cos^2 x$$

$$329 \quad \frac{\cos 2x}{\sqrt{2}\cos\left(\frac{\pi}{4} - x\right)} + \operatorname{sen}\left(\frac{\pi}{2} - x\right) = 1$$

$$330 \quad 1 - 2\operatorname{sen}^2 x + \sqrt{3}\operatorname{sen} 2x = (1 + \operatorname{ctg}^2 x) \cos^2\left(\frac{3}{2}\pi - x\right)$$

$$331 \quad 4\operatorname{sen}^3 x - 4\operatorname{sen} x \operatorname{sen} 2x - 3\operatorname{sen} x + 6\cos x = 0$$

$$332 \quad \cos 3x - \cos 5x = \operatorname{sen} 6x + \operatorname{sen} 2x$$

$$333 \quad \frac{\sqrt{3}\cos x}{\operatorname{sen}\left(\frac{\pi}{3} - x\right)} + \frac{\operatorname{sen} x}{\cos\left(\frac{\pi}{6} + x\right)} = 1$$

$$334 \quad 2 - \cos 2x - 2\operatorname{sen}^2 2x = 0$$

$$335 \quad \frac{1}{\cos 2x} = 1 + \frac{\cos\left(\frac{\pi}{4} + x\right)}{\cos\left(\frac{\pi}{4} - x\right)}$$

Sistemi goniometrici

Risolvere i seguenti sistemi.

$$336 \quad \begin{cases} x = \frac{y}{2} \\ \operatorname{sen}^2 x + \cos^2 y = \frac{1}{2} \end{cases}$$

$$\begin{cases} x = \frac{\pi}{4} + k \frac{\pi}{2} \\ y = \frac{\pi}{2} + k\pi \end{cases}; \quad \begin{cases} x = \pm \frac{\pi}{6} + k\pi \\ y = \pm \frac{\pi}{3} + 2k\pi \end{cases}$$

$$337 \quad \begin{cases} x + 2y = \frac{\pi}{3} \\ \operatorname{sen} \frac{x}{2} + \cos y = \sqrt{3} \end{cases}$$

$$\begin{cases} x = \frac{2}{3}\pi - 4k\pi \\ y = -\frac{\pi}{6} + 2k\pi \end{cases}$$

$$338 \quad \begin{cases} x - y = \frac{\pi}{4} \\ \operatorname{sen} x + \sqrt{2} \cos y = 1 \end{cases}$$

$$\begin{cases} x = 2k\pi \\ y = -\frac{\pi}{4} + 2k\pi \end{cases}; \quad \begin{cases} x = \alpha + 2k\pi \\ y = \alpha - \frac{\pi}{4} + 2k\pi \\ \alpha = \operatorname{arcsen} \frac{4}{5}; \quad \frac{\pi}{2} < \alpha < \pi \end{cases}$$

$$339 \quad \begin{cases} x + y = \frac{3}{2}\pi \\ \operatorname{sen} x + \operatorname{sen} y = 1 \end{cases}$$

$$\begin{cases} x = \frac{\pi}{2} + 2k\pi \\ y = \pi - 2k\pi \end{cases}; \quad \begin{cases} x = \pi - 2k\pi \\ y = \frac{\pi}{2} + 2k\pi \end{cases}$$

$$340 \quad \begin{cases} x - y = \frac{\pi}{3} \\ \operatorname{sen} x - \frac{\sqrt{3}}{2} \cos y = \frac{1}{4} \end{cases}$$

$$\begin{cases} x = \frac{\pi}{2} + 2k\pi \\ y = \frac{\pi}{6} + 2k\pi \end{cases}; \quad \begin{cases} x = \frac{7}{6}\pi + 2k\pi \\ y = \frac{5}{6}\pi + 2k\pi \end{cases}$$

$$341 \quad \begin{cases} x - y = \frac{\pi}{3} \\ \operatorname{sen} x + \cos y = \frac{1}{2} \end{cases}$$

$$\begin{cases} x = 2k\pi \\ y = -\frac{\pi}{3} + 2k\pi \end{cases}; \quad \begin{cases} x = \frac{5}{6}\pi + 2k\pi \\ y = \frac{\pi}{2} + 2k\pi \end{cases}$$

$$342 \begin{cases} x + y = \pi \\ \text{sen } 2x + \cos y = 0 \end{cases}$$

$$\begin{cases} x = \frac{\pi}{2} + k\pi \\ y = \frac{\pi}{2} - k\pi \end{cases}; \begin{cases} x = \frac{\pi}{6} + 2k\pi \\ y = \frac{5}{6}\pi - 2k\pi \end{cases}; \begin{cases} x = \frac{5}{6}\pi + 2k\pi \\ y = \frac{\pi}{6} - 2k\pi \end{cases}$$

$$343 \begin{cases} 2x + y = \frac{\pi}{4} \\ \cos x + \text{sen } y = -\frac{\sqrt{2}}{2} \end{cases}$$

$$\begin{cases} x = \frac{\pi}{2} + k\pi \\ y = -\frac{3}{4}\pi - 2k\pi \end{cases}; \begin{cases} x = \frac{5}{12}\pi + 2k\pi \\ y = -\frac{7}{12}\pi - 4k\pi \end{cases}; \begin{cases} x = \frac{13}{12}\pi + 2k\pi \\ y = -\frac{23}{12}\pi - 4k\pi \end{cases}$$

$$344 \begin{cases} x - y = \frac{\pi}{6} \\ \text{sen } x \cos y = \frac{1}{2} \end{cases}$$

$$\begin{cases} x = \frac{\pi}{2} + k\pi \\ y = \frac{\pi}{3} + k\pi \end{cases}; \begin{cases} x = \frac{\pi}{6} + k\pi \\ y = k\pi \end{cases}$$

$$345 \begin{cases} x - 2y = -\frac{3}{4}\pi \\ \cos x - \cos y = 0 \end{cases}$$

$$\begin{cases} x = \frac{3}{4}\pi + 4k\pi \\ y = \frac{3}{4}\pi + 2k\pi \end{cases}; \begin{cases} x = -\frac{\pi}{4} + \frac{4}{3}k\pi \\ y = \frac{\pi}{4} + \frac{2}{3}k\pi \end{cases}$$

$$346 \begin{cases} 2x + y = \pi \\ \text{tg } 2x - \text{tg } y = 2 \end{cases}$$

$$\begin{cases} x = \frac{\pi}{8} + k\frac{\pi}{2} \\ y = \frac{3}{4}\pi - k\pi \end{cases}$$

$$347 \begin{cases} x - y = \frac{\pi}{2} \\ 3\text{sen } x - \cos y = \sqrt{2} \end{cases}$$

$$\begin{cases} x = \frac{3}{4}\pi + 2k\pi \\ y = \frac{\pi}{4} + 2k\pi \end{cases}; \begin{cases} x = \frac{\pi}{4} + 2k\pi \\ y = -\frac{\pi}{4} + 2k\pi \end{cases}$$

$$348 \begin{cases} \text{sen } x - \cos y = 1 \\ \text{sen}^2 x - \cos^2 y = 0 \end{cases}$$

$$\begin{cases} x = \frac{\pi}{6} + 2k\pi; x = \frac{5}{6}\pi + 2k\pi \\ y = \frac{2}{3}\pi + 2h\pi; y = \frac{4}{3}\pi + 2h\pi \end{cases}$$

$$349 \begin{cases} \text{sen } x + \cos y = 1 \\ \text{sen}^2 x + 3\cos^2 y - 1 = 0 \end{cases}$$

$$\begin{cases} x = \frac{\pi}{2} + 2k\pi \\ y = \frac{\pi}{2} + h\pi \end{cases}; \begin{cases} x = \frac{\pi}{6} + 2k\pi; x = \frac{5}{6}\pi + 2k\pi \\ y = \pm \frac{\pi}{3} + 2h\pi \end{cases}$$

$$350 \begin{cases} \log \text{sen } x - \log \cos y = 0 \\ \text{sen } x \cos y = \frac{3}{4} \end{cases}$$

$$\begin{cases} x = \frac{\pi}{3} + 2k\pi; x = \frac{2}{3}\pi + 2k\pi \\ y = \pm \frac{\pi}{6} + 2h\pi \end{cases}$$

$$351 \begin{cases} 2^{\text{sen } x} - 2^{-\cos y} = 0 \\ \text{sen}^2 x + \cos^2 y = 1 \end{cases}$$

$$\begin{cases} x = \frac{\pi}{4} + 2k\pi; x = \frac{3}{4}\pi + 2k\pi \\ y = \pm \frac{3}{4}\pi + 2h\pi \end{cases}; \begin{cases} x = -\frac{\pi}{4} + 2k\pi; x = -\frac{3}{4}\pi + 2k\pi \\ y = \pm \frac{\pi}{4} + 2h\pi \end{cases}$$