Trigonometry – more equations for practice

Solve for $0 \le x < 2\pi$

Answers:

(1) $\sec 2x - \sqrt{2} = 0$

$$x = \frac{\pi}{8}, \frac{7\pi}{8}, \frac{9\pi}{8}, \frac{15\pi}{8}$$

(2) $4\sin x \cos x - 2\sqrt{3}\sin x - 2\sqrt{2}\cos x + \sqrt{6} = 0$

$$x = \frac{\pi}{6}, \frac{\pi}{4}, \frac{3\pi}{4}, \frac{11\pi}{6}$$

(3) $\sin^4 x = \sin^2 x$

$$x = 0, \frac{\pi}{2}, \pi, \frac{3\pi}{2}$$

(4) 4 cscx - 9 = 0

$$x = \sin^{-1}\left(\frac{4}{9}\right), \pi - \sin^{-1}\left(\frac{4}{9}\right)$$

(5) 4 tan²x-1=0

$$x = \tan^{-1}\left(\frac{1}{2}\right), \ \pi - \tan^{-1}\left(\frac{1}{2}\right), \ \pi + \tan^{-1}\left(\frac{1}{2}\right), \ 2\pi - \tan^{-1}\left(\frac{1}{2}\right)$$

Find all solutions:

(6) $\sin^2\left(\frac{x}{2}\right) + \cos x = 1$

$x = 2\pi k, k \text{ int} eger$

(7) cos²x = 1- 3sinx

$x = \pi k, k \text{ int} eger$

(8) sin3x – sinx = 0

$x = \pi k, \ \frac{\pi}{4} + \frac{\pi}{2}k, \quad k \text{ int} eger$

(9) sin 5θ = 1

$\theta = \frac{\pi}{10} + \frac{2\pi k}{5}, k \text{ int} eger$

(10) sinx cos2x – cosx sin2x = $\frac{\sqrt{3}}{2}$

$$x = \begin{cases} \dfrac{4\pi}{3} + 2\pi k \\ \dfrac{5\pi}{3} + 2\pi k \end{cases} \quad k \quad \text{int} eger$$