

18, 8

نام و نام خانوادگی کلاس ۱۶ پاسنامه تشریحی تکلیف شماره ۱۶

الف) $1 - 2\sin^2 x - 3\sin x + 1 = 0 \Rightarrow -2\sin^2 x - 3\sin x + 2 = 0 \quad \Delta = 17$
 $\frac{3 \pm \sqrt{17}}{-2} \Rightarrow \frac{1}{2} = \sin x \Rightarrow x = 2k\pi + \pi - \frac{\pi}{6} = 2k\pi + \frac{5\pi}{6} / 2k\pi + \frac{\pi}{6}$

ب) $2\cos^2 x + \cos x - 3 = 0 \quad \Delta = 25 \quad \frac{-1 \pm 5}{2} = 1 \Rightarrow \cos x = 1$
 $\cos x = 1 \Rightarrow x = 2k\pi$

الف) $(\sin^2 + \cos^2)(\sin^2 - \cos^2) = -\cos^2 x = 2\sin^2 x \cos x \Rightarrow \cos x = 0 \Rightarrow$
 $\sin x = \frac{1}{2} \Rightarrow x = 2k\pi + \frac{\pi}{6} / 2k\pi + \pi - \frac{\pi}{6} / 2k\pi + \frac{\pi}{2} / 2k\pi + \frac{5\pi}{6}$

ب) $2\cos^2 x - 1 = \cos^2 x = -\sin^2 x = \cos x \Rightarrow \cos x = \cos(\frac{\pi}{2} + x) \Rightarrow x = 2k\pi - \frac{\pi}{2}$
 $\frac{3\pi}{2} - \frac{\pi}{2} = x$

الف) $2\cos x + 1 = \frac{1}{\sin x} \Rightarrow 2\cos^2 x = 1 - \cos^2 x \Rightarrow \cos^2 x = -\cos x \Rightarrow$
 $\cos x = \frac{1}{2} \rightarrow x = 2k\pi \pm \frac{\pi}{3}$
 $\cos x = \cos(2k\pi + \frac{\pi}{3}) \Rightarrow x = 2k\pi + \frac{\pi}{3} \Rightarrow x = 2k\pi + \frac{\pi}{3}$
 $\cos x = \cos(2k\pi - \frac{\pi}{3}) \Rightarrow x = 2k\pi - \frac{\pi}{3} = x$
 $\cos x = -\sin x \Rightarrow \cos x = -\sin x = \cos(\frac{\pi}{2} + x) \Rightarrow x = k\pi + \frac{\pi}{4} \Rightarrow x = k\pi + \frac{\pi}{4}$

الف) $\cos(\frac{\pi}{2} + x) \sin(\frac{\pi}{2} + x) = \frac{1}{2} \Rightarrow \frac{1}{2} \sin(\frac{\pi}{2} + x) = \frac{1}{2} \Rightarrow \frac{1}{2} = \cos x \Rightarrow$
 $x = k\pi \pm \frac{\pi}{3}$

ب) $\cos(x - \frac{\pi}{4}) = -\sin x = \cos(x + \frac{\pi}{4}) \Rightarrow x = \frac{\pi}{4} - \frac{\pi}{4} + 2k\pi \Rightarrow$
 $x = \frac{2k\pi - \frac{\pi}{2}}{2}$

$2\cos^2 x + 1 - \sin^2 x = \cos^2 x \Rightarrow 2\cos^2 x + 1 = \cos^2 x \Rightarrow \cos^2 x = -1$
 $x = 2k\pi + \pi \Rightarrow k\pi + \frac{\pi}{2} = x$
 $x = k\pi + \frac{\pi}{2} \rightarrow x = \frac{k\pi}{2} + \frac{\pi}{2}$

$$\frac{\cos \frac{x}{2} + 1}{\sin \frac{x}{2}} = \frac{\sin \frac{x}{2}}{\cos \frac{x}{2} + 1} \Rightarrow \sin \frac{x}{2} = 1 + \cos \frac{x}{2} + \cos \frac{x}{2} \Rightarrow \cos \frac{x}{2} = -1 \Rightarrow x = 2\pi$$

$$\cos \frac{x}{2} (\cos \frac{x}{2} + 1) = 0 \Rightarrow \cos \frac{x}{2} = 0 \text{ or } \cos \frac{x}{2} = -1 \Rightarrow x = \pi \text{ or } x = 2\pi$$

دو جواب

(3)

$$1 - \cos x = \sin^2 x \Rightarrow \sin^2 x = 1 - \cos x \Rightarrow \sin^2 x = 2 \sin^2 \frac{x}{2} \Rightarrow \sin^2 \frac{x}{2} = \frac{1 - \cos x}{2}$$

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

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

(1, 2)

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

$$\Rightarrow \frac{1 - \tan^2 x}{1 + \tan^2 x} = \frac{\pi}{2} - x + \frac{\pi}{2} \Rightarrow x = \frac{\pi}{2} + \frac{\pi}{2} = \pi$$

(3)

$$1 + \sin^2 x = \cos^2 x \Rightarrow \cos^2 x = \sin^2 x \Rightarrow \cos x = \sin x \Rightarrow x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

$$x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

$$\Rightarrow x = \frac{\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}, \frac{7\pi}{4}$$

(3)

$$1 - \cos x = 1 \Rightarrow \cos x = 0 \Rightarrow x = \frac{\pi}{2}, \frac{3\pi}{2}$$

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

(3)