

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۱۴... کلاس: B. ...	
الف) $1 - 2\sin^2 x + \cos^2 x - 1 \rightarrow 2\sin^2 x + \cos^2 x - 2 = 0 \xrightarrow{\sin^2 x = t} t^2 + t - 1 = 0 \Rightarrow t^2 + t - 1 = 0$ $(t+4)(t-1) = 0 \rightarrow (t+2)(t-1) = 0 \rightarrow (\sin^2 x + 2)(2\sin^2 x - 1) = 0 \Rightarrow \begin{cases} \sin^2 x = -2 \text{ غلط} \\ \sin^2 x = \frac{1}{2} = \sin^2 \frac{\pi}{4} \rightarrow x = 2K\pi + \frac{\pi}{4} \\ x = 2K\pi + \frac{3\pi}{4} \end{cases}$ ب) $2(\cos^2 x - 1) + \cos^2 x - 2 = 0 \rightarrow 2(\cos^2 x - 1) + \cos^2 x - 2 = 0 \rightarrow \begin{cases} \cos^2 x = 1 \rightarrow x = 2K\pi \\ \cos^2 x = -\frac{1}{2} \text{ غلط} \end{cases}$	۱
الف) $\frac{(\sin^2 x - \cos^2 x)(\sin^2 x + \cos^2 x)}{-\cos^2 x} = \sin^2 x \rightarrow -(\cos^2 x) = 2\sin^2 x \cos^2 x \rightarrow 2\sin^2 x \cos^2 x + \cos^2 x = 0$ $\Rightarrow \cos^2 x (2\sin^2 x + 1) = 0 \Rightarrow \begin{cases} \cos^2 x = 0 \Rightarrow x = K\pi + \frac{\pi}{2} \rightarrow x = \frac{K\pi}{2} + \frac{\pi}{2} \\ \sin^2 x = -\frac{1}{2} = \sin^2 -\frac{\pi}{4} \rightarrow \begin{cases} x = 2K\pi - \frac{\pi}{4} \rightarrow x = K\pi - \frac{\pi}{4} \\ x = 2K\pi + \frac{\pi}{4} \rightarrow x = K\pi + \frac{\pi}{4} \end{cases} \end{cases}$ ب) $2(\cos^2 x - 1) + 2\sin^2 x \cos^2 x = 0 \Rightarrow \cos^2 x + \sin^2 x = 0 \rightarrow \cos^2 x = -\sin^2 x \xrightarrow{\oplus \frac{\pi}{4}}$ $\Rightarrow x = 2K\pi - \frac{\pi}{4} \rightarrow x = K\pi - \frac{\pi}{4}$	۲
الف) $\frac{\cos^2 x}{\sin^2 x} (2\cos^2 x + 1) = \frac{1}{\sin^2 x} \xrightarrow{\sin^2 x = t} 2t + 1 = \frac{1}{t} \Rightarrow 2t^2 + t - 1 = 0 \Rightarrow \begin{cases} \cos^2 x = -1 \rightarrow \text{غلط} \\ \cos^2 x = \frac{1}{2} = \cos^2 \frac{\pi}{4} \rightarrow x = 2K\pi + \frac{\pi}{4} \end{cases}$ ب) $2\sin^2 x - 2 - \sin^2 x (\cos^2 x + \cos^2 x) = 0$ $2(\sin^2 x - 1) - \sin^2 x (\cos^2 x + \cos^2 x) = 0 \rightarrow -\cos^2 x - \sin^2 x (\cos^2 x + \cos^2 x) = 0 \rightarrow \cos^2 x + \sin^2 x (\cos^2 x + \cos^2 x) = 0$ $\cos^2 x (\cos^2 x + \sin^2 x) = 0 \xrightarrow{\cos^2 x = 0 \Rightarrow K\pi + \frac{\pi}{2}} \cos^2 x = -\sin^2 x \rightarrow x = K\pi + \frac{\pi}{4}$	۳
الف) $\cos(\frac{\pi}{4} + x) \cos(\frac{\pi}{4} - x) = \frac{1}{4} \rightarrow \cos(\frac{\pi}{4} + x) \sin(\frac{\pi}{4} + x) = \frac{1}{4} \rightarrow \frac{1}{2} \sin(2x + \frac{\pi}{2}) = \frac{1}{4}$ $\sin(2x + \frac{\pi}{2}) = \frac{1}{2} \rightarrow \cos 2x = \frac{1}{2} = \cos \frac{\pi}{3} \rightarrow \begin{cases} 2x = 2K\pi + \frac{\pi}{3} \rightarrow x = K\pi + \frac{\pi}{6} \\ 2x = 2K\pi - \frac{\pi}{3} \rightarrow x = K\pi - \frac{\pi}{6} \end{cases}$ ب) $\cos(2x - \frac{\pi}{4}) = \cos(\frac{\pi}{4} + 2x) \rightarrow 2x - \frac{\pi}{4} = 2K\pi + \frac{\pi}{4} + 2x \rightarrow 2K\pi + \frac{\pi}{2} = 0 \propto$ $2x - \frac{\pi}{4} = 2K\pi - \frac{\pi}{4} - 2x \rightarrow 4x = 2K\pi + \frac{\pi}{2} - \frac{\pi}{2} \rightarrow 4x = 2K\pi \rightarrow x = \frac{K\pi}{2} = \frac{K\pi}{2}$	۴
$\frac{2\sin^2 x \cos^2 x + \sin^2 x}{\sin^2 x} = 1 \rightarrow \frac{\sin^2 x (2\cos^2 x + 1)}{\sin^2 x} = 1 \xrightarrow{\sin^2 x \neq 0} 2\cos^2 x + 1 = 1 \rightarrow 2\cos^2 x = 0$ $\Rightarrow \cos^2 x = 0 \rightarrow x = K\pi + \frac{\pi}{2} \rightarrow x = \frac{K\pi}{2} + \frac{\pi}{2}$ $\sin^2 x \neq 0 \rightarrow x \neq K\pi \rightarrow x \neq \frac{K\pi}{2}$	۵

$$\tan \frac{x}{\varepsilon} = \frac{1}{\sin \frac{x}{\varepsilon}} + \frac{\cos \frac{x}{\varepsilon}}{\sin \frac{x}{\varepsilon}} = \frac{1 + \cos \frac{x}{\varepsilon}}{\sin \frac{x}{\varepsilon}} = \cot \frac{x}{\varepsilon}$$

$$\tan \frac{x}{\varepsilon} = \tan\left(\frac{\pi}{\varepsilon} - \frac{x}{\varepsilon}\right) \rightarrow \frac{x}{\varepsilon} = K\pi + \frac{\pi}{\varepsilon} - \frac{x}{\varepsilon} \rightarrow \frac{x}{\varepsilon} = K\pi + \frac{\pi}{\varepsilon} \rightarrow x = PK\pi + \pi$$

$$K=-1 \rightarrow x = -\pi \quad K=0 \rightarrow x = \pi \quad \pi - (-\pi) = 2\pi \quad \checkmark$$

$$1 - \cos^2 x + \sin^2 x \cos^2 x = 0 \rightarrow \sin^2 x + \sin^2 x \cos^2 x = 0 \rightarrow \sin^2 x (1 + \cos^2 x) = 0 \rightarrow$$

$$\sin x = 0 \rightarrow x = K\pi \rightarrow x = 0, \pi, 2\pi$$

$$\cos^2 x = -1 \rightarrow x = PK\pi + \pi \rightarrow x = \frac{PK\pi}{\rho} + \frac{\pi}{\rho} \rightarrow x = \frac{\pi}{\rho}, \pi \Rightarrow \text{لا بد}$$

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

$$\Rightarrow x = \frac{\pi}{14} - \frac{K\pi}{\varepsilon} \quad \checkmark$$

$$\text{فإن} \rightarrow 1 + \sin^2 x = \cos^2 x \rightarrow \sin^2 x = \cos^2 x - 1 \rightarrow \sin^2 x = \cos^2 x$$

$$\cos^2 x = \cos\left(\frac{\pi}{\varepsilon} - x\right) \rightarrow \varepsilon x = PK\pi + \frac{\pi}{\varepsilon} - x \rightarrow x = PK\pi + \frac{\pi}{\varepsilon} \rightarrow x = \frac{PK\pi}{\rho} + \frac{\pi}{\rho}$$

$$\varepsilon x = PK\pi - \frac{\pi}{\varepsilon} + x \rightarrow x = PK\pi - \frac{\pi}{\varepsilon} \rightarrow x = K\pi - \frac{\pi}{\varepsilon} \quad \checkmark$$

$$\rightarrow x = \frac{\pi}{14}, x = \frac{0\pi}{14} \neq \frac{\pi}{\varepsilon} \rightarrow \text{بالتالي فإن} \rightarrow x = \frac{\pi}{14}, x = \frac{13\pi}{\varepsilon} \quad \checkmark$$

$$x = \frac{\pi}{4} \quad x = \frac{0\pi}{4} \quad x = \frac{3\pi}{4} \rightarrow \cos(0) \rightarrow \text{لا بد} \rightarrow \text{فإن} \quad \checkmark$$

$$\text{الف) } \sin^2 x - \cos^2 x = 1 \rightarrow -\cos^2 x = 1 \rightarrow \cos^2 x = -1 = \cos \pi \rightarrow x = PK\pi + \pi \rightarrow x = K\pi + \frac{\pi}{\rho}$$

$$\Rightarrow \begin{cases} K=0 \rightarrow \frac{\pi}{\rho} & K=1 \rightarrow \frac{2\pi}{\rho} \\ K=-1 \rightarrow \frac{\pi}{\rho} & K=2 \rightarrow \frac{3\pi}{\rho} \end{cases} \rightarrow \frac{\pi}{\rho}, \frac{2\pi}{\rho} \quad \checkmark$$

$$\text{ب) } \text{تقابلتي المعادلتين} \rightarrow K=0 \rightarrow 0 - (1)^2 = -1 \quad \checkmark$$

$$x = \frac{\pi}{\rho} \rightarrow 1^2 - 0^2 = 1 \quad \checkmark$$

$$x = \pi \rightarrow 0 - (-1)^2 = -1 \quad \checkmark$$

$$x = \frac{3\pi}{\rho} \rightarrow (-1)^2 - 0^2 = 1 \quad \checkmark$$

$$\Rightarrow x = 0, \frac{2\pi}{\rho}, \pi$$