

نام و نام خانوادگی رشته تحصیلی کلاس پاسخنامه تشریحی تکلیف شماره
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الف) $IR - \left\{1, \frac{1}{\alpha}\right\}$ $4x^4 + 3x^3 - 11x + 6 = 0$
 $(x-1)(4x^3 + 7x^2 + 4x - 6) = 0 \rightarrow x \begin{cases} x=1 \\ x=\frac{1}{\alpha} \end{cases}$

ب) $IR - \left\{-\frac{1}{4}, -1, -\frac{1}{2}\right\}$ $4x^4 + 9x^3 + 11x^2 + 6x = 0$
 $x(x+1)(4x^2 + 5x + 6) = 0 \rightarrow x \begin{cases} x=0 \\ x=-1 \end{cases}$

الف) $IR - \{1\}$ $x^4 - 4x^3 + 3x^2 - 1 = 0 \rightarrow (x-1)(x^3 - 3x^2 + 3x - 1) = 0$
 $(x-1)^4 = 0$

ب) $(-\infty, -1] \cup (1, +\infty)$

$\frac{x^4 + 3x^3}{x^4 - 4x^3 + 3x^2 - 1} \geq 0$ $\rightarrow (x-1)(x^3 - 3x^2 + 3x - 1) = 0$

$IR - \{-\frac{1}{2}, 0, 2, \alpha\}$ $x^4 - \alpha(x-1) - 2x + \alpha = 0$
 $x^4 - \alpha x + \alpha - 2x + \alpha = 0 \rightarrow x^4 - \alpha x + 1 = 0 \rightarrow (x-1)(x-\alpha) = 0$
 $x \begin{cases} x=1 \\ x=\alpha \end{cases}$

$x^4 - \alpha(x-1) - 2x + \alpha = 0 \rightarrow x^4 - \alpha x + 1 = 0 \rightarrow (x-1)(x-\alpha) = 0$
 $x \begin{cases} x=1 \\ x=\alpha \end{cases}$

الف) $(-\infty, -1] \cup [2, +\infty)$ $[-x] - 1 \geq 0 \rightarrow [-x] \geq 1 \rightarrow -x \geq 1 \rightarrow x \leq -1$

ب) $IR - [-1, -1] \cup [2, 2] \rightarrow (-\infty, -1) \cup (-1, 2) \cup (2, +\infty)$

$[x]^4 - 4[x] - 1 = 0 \rightarrow ([x]+1)([x]-1) = 0 \rightarrow \begin{cases} [x] = -1 \rightarrow x \in [-1, -1] \\ [x] = 1 \rightarrow x \in [2, 2] \end{cases}$

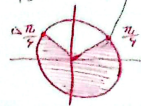
الف) $[-\frac{1}{4}, +\infty)$ $[x - \frac{1}{4}] + [x + \frac{1}{4}] \geq 0 \rightarrow [x - \frac{1}{4}] \geq -[x + \frac{1}{4}] \rightarrow x - \frac{1}{4} \geq -x - \frac{1}{4}$
 $2x \geq -\frac{1}{2} \rightarrow x \geq -\frac{1}{4}$

ب) !

الف) $IR - \left\{ K\pi + \frac{\pi}{r} \right\} \quad \cos x + 1 = 0 \rightarrow \cos x = -1 \rightarrow x = K\pi + \frac{\pi}{r}$

ب) $\left[K\pi + \pi - \frac{\pi}{4}, K\pi + \frac{\pi}{4} \right]$

$1 - \sqrt{\sin x} \geq 0 \rightarrow \sqrt{\sin x} \leq 1 \rightarrow \sin x \leq \frac{1}{4} \rightarrow \sin x \leq \frac{1}{4}$



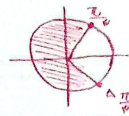
الف) $\left[K\pi + \frac{\pi}{4}, K\pi + \pi - \frac{\pi}{4} \right] \quad \sqrt{\sin x} - 1 \geq 0 \rightarrow \sqrt{\sin x} \geq 1$

$\sin x \geq \frac{1}{4}$



ب) $\left[K\pi + \frac{\pi}{4}, K\pi + \frac{5\pi}{4} \right] \quad 1 - \sqrt{\cos x} \geq 0 \rightarrow \sqrt{\cos x} \leq 1$

$\cos x \leq \frac{1}{4}$



الف) $[-\sqrt{1-x}, \frac{1}{1-x}] \quad x^2 + x + 1 \leq 1 \rightarrow x^2 + x \leq 0$



$x^2 + x + 1 \geq 0$

$\frac{-x}{1-x} + \frac{0}{1-x} + [-\sqrt{1-x}]$
 $\frac{-x}{1-x} + \frac{-1}{1-x} + (-\infty, -1] \cup [1, +\infty)$

ب) $x - \sqrt{x} \geq 0 \rightarrow x \leq \sqrt{x} \quad 1 - \sqrt{x - \sqrt{x}} \leq 1 \rightarrow x - \sqrt{x} \leq 1 \rightarrow \sqrt{x} \leq 0 \rightarrow x \geq 0$

$[0, +\infty)$

الف) $(0, +\infty) \quad x > 0$

$1 - \log_x x > 0 \rightarrow \log_x x < 1 \rightarrow x < x^2$

$\ln x (0, +\infty)$

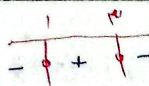
ب) $(0, \frac{1}{4}) \quad x > 0$

$1 - \log_{\frac{1}{4}} x > 0 \rightarrow \log_{\frac{1}{4}} x < 1 \rightarrow x < \frac{1}{4}$

$\ln x (0, \frac{1}{4})$

الف) $\sqrt{x-x^2} - \lambda \geq 0 \quad [1, +\infty)$

$\sqrt{x-x^2} = \lambda \rightarrow x-x^2 = \lambda^2 \rightarrow x^2 - x + \lambda^2 = 0$



ب) $\frac{x^2 + 1}{x^2 + x} < 0 \rightarrow \frac{x^2 + 1}{x^2 + x} \geq 0$



$(-\infty, -1) \cup [-\frac{1}{4}, +\infty)$

$x^2 + x \neq 0 \rightarrow x \neq -1 \rightarrow x \neq 0$