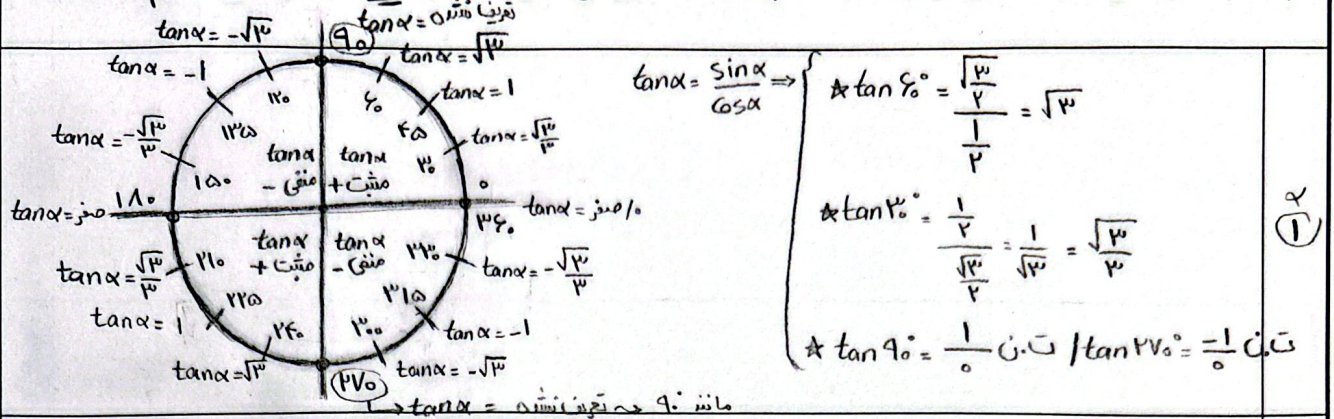


نام و نام خانوادگی ... (حما... موسوی) پاسخنامه تشریحی تکلیف شماره ۵۲... کلاس ... یاد... هم... د... A.



الف) $\sin \frac{\pi}{6} + \cos \pi + 2 \tan \frac{\pi}{6} \Rightarrow \frac{1}{2} - 1 + 2(-1) = \frac{1}{2} - 1 - 2 = -\frac{5}{2}$ ۲.۲

ب) $-\cos \frac{5\pi}{6} + \sin \frac{\pi}{6} - 2 \sin \frac{\pi}{6} \Rightarrow -(-\frac{\sqrt{3}}{2}) + \frac{1}{2} - 2(\frac{1}{2}) = \frac{\sqrt{3}}{2} + \frac{1}{2} - 1 = \frac{\sqrt{3}-1}{2}$ ۲.۲

ج) $\cot \frac{\pi}{6} + 2 \cot \frac{\pi}{3} - 2 \tan \frac{5\pi}{6} \Rightarrow -\frac{\sqrt{3}}{3} + \frac{2\sqrt{3}}{3} - 2(-\frac{\sqrt{3}}{3}) = -\frac{\sqrt{3}}{3} + \frac{2\sqrt{3}}{3} + \frac{2\sqrt{3}}{3} = \frac{3\sqrt{3}}{3} = \sqrt{3}$ ۲.۲

د) $\cos(\sin \pi) + \sin(\pi \cos \frac{\pi}{6}) \Rightarrow \cos 0 + \sin \pi = 1 + 1 = 2$ ۲.۲

$\star f(x) = \begin{cases} x^2 + fx & x > 1 \\ 2x + a + 2 & x \leq 1 \end{cases} \xrightarrow{x=0} a^2 + fa = 2a + a + 2 \rightarrow a^2 + a - 2 = 0$ (مع. درایب صفر.)

$\begin{cases} a = 1 \checkmark \text{ غ.ق.} \\ a = -2 \times \text{غ.ق.} \end{cases}$

$f(1) = ? \rightarrow \begin{cases} x^2 + fx \Rightarrow 1 + f = 5 \checkmark \\ 2x + 1 + 2 \Rightarrow 2 + 1 + 2 = 5 \checkmark \end{cases} \Rightarrow \underline{f(1) = 5}$ ۲.۲

$a > 0 \oplus$ مثبت

شرط سوال

$\star f(x) = \begin{cases} 2x^2 - b & |x+1| > 2 \\ a + 2x & -3 \leq x \leq -1 \end{cases} \rightsquigarrow \begin{cases} \textcircled{1} |x+1| > 2 \Rightarrow x+1 > 2 \Rightarrow x > 1 \checkmark \text{ غ.ق.} \\ \textcircled{2} |x+1| > 2 \Rightarrow x+1 < -2 \Rightarrow x < -3 \checkmark \text{ غ.ق.} \end{cases}$

(به ازای $x = -3$ ، در دو رابطه برابر اند)

$a+b = ? \quad x = -3 \rightarrow 2(-3)^2 - b = a + 2(-3) \Rightarrow 18 - b = a - 6 \rightarrow \underline{a+b = 24}$ ۲.۲

$a+b = 24$

الف) $y = \frac{1}{x^3 - 4x^2} \Rightarrow x^3 - 4x^2 > 0 \rightarrow x^2(x-4) > 0 \xrightarrow{x=0, x=4} \begin{array}{c} 0 \quad 4 \\ + \quad - \quad + \end{array} \quad \begin{array}{l} D_f = (-\infty, 0) \cup (4, +\infty) \\ D_f = \mathbb{R} - \{0, 4\} \end{array}$ ۲.۲

ب) $y = \frac{1}{2x^3 + fx^2 + 2x + f} \Rightarrow 2x^3 + fx^2 + 2x + f > 0 \rightarrow (1+x^2)(2x+f) > 0 \Rightarrow D_f = \mathbb{R} - \{-2\}$ ۵

$$\text{الف) } y = \sqrt{x^2-1} + \sqrt{x-2} \leadsto \begin{cases} x^2-1 \geq 0 \rightarrow x^2 \geq 1 \Rightarrow x = \pm 1 \\ x-2 \geq 0 \rightarrow x \geq 2 \Rightarrow x = 2 \end{cases} \Rightarrow \begin{array}{c} -1 \quad 1 \\ + \quad - \quad + \\ \hline \end{array} \cap \begin{array}{c} 2 \\ - \quad + \\ \hline \end{array}$$

$$(-\infty, -1] \cup [1, +\infty) \cap [2, +\infty) = D_f = [2, +\infty) \quad \text{ت.ع}$$

$$\text{ب) } y = \frac{\sqrt{4-x^2}}{\sqrt{x-3}} \leadsto \begin{cases} 4-x^2 \geq 0 \rightarrow 2 \geq x \geq -2 \\ x-3 \geq 0 \rightarrow x \geq 3 \end{cases} \Rightarrow \frac{1}{3} < x \leq 2 \rightarrow D_f = \left(\frac{1}{3}, 2\right] \quad \text{ت.ع}$$

$$\begin{cases} x-a \geq 0 \leadsto x \geq \frac{a}{b} \\ b-x \geq 0 \leadsto x \leq \frac{b}{a} \end{cases} \Rightarrow \frac{a}{b} = \frac{b}{a} = 1 \begin{matrix} \nearrow a=1 \\ \searrow b=1 \end{matrix} \rightarrow \frac{b}{a} = \frac{1}{1} \quad \text{ت.ع}$$

$$\text{الف) } y = \sqrt{\frac{x^2-x-6}{x^2-13x^2+36}} \leadsto \sqrt{\frac{(x-3)(x+2)}{(x-2)(x+2)(x+3)(x-3)}} \Rightarrow \begin{array}{c} -3 \quad -2 \quad 2 \quad 3 \\ + \quad - \quad - \quad + \\ \hline \end{array} \quad D_f = (-\infty, -3) \cup (-2, 2) \cup (3, +\infty)$$

$$\text{ب) } y = \sqrt{\frac{x^2-2x^2-5x+6}{x^2+2x^2-5x-6}} \leadsto \sqrt{\frac{(x-1)(x-3)(x+2)}{(x+1)(x+3)(x-2)}} \Rightarrow \begin{array}{c} -3 \quad -2 \quad -1 \quad 1 \quad 2 \quad 3 \\ + \quad - \quad - \quad + \quad - \quad + \\ \hline \end{array} \quad D_f = (-\infty, -3) \cup (-2, -1) \cup (1, 2) \cup (3, +\infty)$$

$$\text{الف) } \sqrt{2[x]-4} \leadsto [x] \geq 2 \rightarrow 2 \leq x \quad D_f = [2, +\infty)$$

$$\text{ب) } \sqrt{2[x]-5} \leadsto [x] \geq \left(\frac{5}{2}\right) \rightarrow 3 \leq x \quad D_f = [3, +\infty)$$

$$\text{الف) } \sqrt{\frac{x+1}{|x-3|}} + \sqrt{\frac{4-x}{x^2+2x+3}} \leadsto (x+3)^2$$

$$\begin{array}{c} -1 \quad 3 \\ - \quad + \quad - \quad + \\ \hline \end{array} \cap \begin{array}{c} -3 \quad -1 \quad 1 \\ + \quad - \quad + \quad - \\ \hline \end{array}$$

$$D_f = [-1, 3) \cup (3, 4]$$

$$\text{ب) } \sqrt{[x]-4} + \sqrt{4-[x]} =$$

$$\begin{matrix} [x] \geq 4 & [x] \leq 4 \\ x \geq 4 & \cap & x \leq 4 \end{matrix}$$

$$D_f = \emptyset$$