

$A \times B - B^T \subseteq ?$ $A \times B = \{(1,2), (1,3), (2,2), (2,3), (3,2), (3,3)\}$
 $B^T \subseteq B \times B = \{(2,2), (2,3), (3,2), (3,3)\}$
 $A \times B - B^T = \{(1,2), (1,3)\}$

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الف) $m^2 \leq m+2 \rightarrow m^2-m-2 \leq 0$ $\xrightarrow{m \leq -1} GQ$
 $m \leq 2 \rightarrow (2,4), (2,1) \Rightarrow GQ$
 $2 \leq 2, 1 \neq 4$

ب) $m^2 \leq m+2 \rightarrow m^2-m-2 \leq 0$ $\xrightarrow{m \leq -1} (-1,4), (-1,3) \Rightarrow GQ$
 $m \leq 2 \rightarrow -1 \leq -1, 4 \neq 3$
 $(2,1), (2,4) \Rightarrow GQ$ (به ازای هیچ مقدار صحیحی m تابع نیست)
 $2 \leq 2, 1 \neq 4$

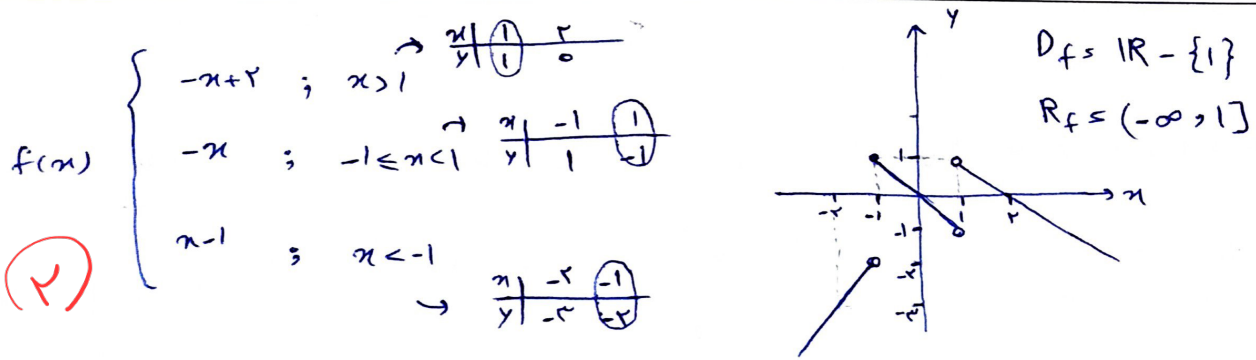
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$x \leq 2 \rightarrow 2a+b \leq 1$ $a+b \leq 0 \rightarrow a \leq -b$
 $x \leq 1 \rightarrow \frac{1}{0} \leq a+b$ $a+b \leq 1 \rightarrow -b+b \leq 1 \rightarrow b \leq 1, a \leq 1$
 $a \times b \leq 1 \times (-1) \leq -1$

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$x \leq k \rightarrow 2k-2 \leq 4-2k \Rightarrow 0 \leq k \leq 2 \rightarrow k \leq \frac{2}{2}$

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الف) $2y^3 + x^3 + 150 \rightarrow 2y_1^3 + x_1^3 + 150 \Rightarrow 2y_1^3 + 150 = 2y_2^3 + 150$
 $2y_1^3 + x_1^3 + 150 \Rightarrow 2y_1^3 + 150 = 2y_2^3 + 150$
 $x_1^3 = x_2^3 \Rightarrow x_1 = x_2$ (۲)
 تابع است $y_1 = y_2$

ب) $x^3 + 2y^3 - 2x - 12y + 150 = 0$
 $\frac{1}{1+9}$

$x^3 + 1 - 2x + 2y^3 - 12y + 9 = 0 \rightarrow (x-1)^3 + (y-3)^3 = 0 \Rightarrow$
 $\begin{cases} x-1=0 \Rightarrow x=1 \\ y-3=0 \Rightarrow y=3 \end{cases}$
 جمع دو عبارت
 مثبت برابر صفر است پس هر دو برابر صفر هستند
 $(1, 3) \rightarrow$ تابع است

الف) $x \sin y \leq y \sin x \Rightarrow x=0 \rightarrow y \sin(0) = 0 \rightarrow y \in \mathbb{R}$
 شال نقض (۳)

ب) $\sqrt{\frac{x}{y}} + \sqrt{\frac{y}{x}} \leq 2 \xrightarrow{(\cdot)^2} 2 + \frac{x}{y} + \frac{y}{x} \leq 4 \Rightarrow \frac{x^2 + y^2}{xy} \leq 2 \rightarrow x^2 + y^2 \leq 2xy$
 $x^2 + y^2 - 2xy \leq 0 \rightarrow (x-y)^2 \leq 0$
 $x-y=0 \rightarrow x=y \rightarrow$ تابع است

الف) $y \leq \sqrt{\frac{x-1}{x-2}} + \sqrt{\frac{2-x}{x}} \quad \textcircled{1} \frac{x-1}{x-2} \geq 0 \Rightarrow x \leq 1$
 $\frac{x-1}{x-2} \geq 0 \Rightarrow x \leq 1$
 $\frac{x-1}{x-2} \geq 0 \Rightarrow x \leq 1$

ب) $\frac{2-x}{x} \geq 0 \Rightarrow x \leq 2$
 $\frac{x-1}{x-2} \geq 0 \Rightarrow x \leq 1$
 $\textcircled{1} \cap \textcircled{2} \Rightarrow Df \subseteq (0, 1]$

ب) $\sqrt{x+1} + \sqrt{y-1} \leq \sqrt{2} \quad \textcircled{1} x \geq 0 \quad \textcircled{2} y \geq 0$
 $\sqrt{y-1} \leq \sqrt{2} - \sqrt{x+1} \rightarrow y-1 \leq 2 - 2\sqrt{x+1} + x+1 \rightarrow y \leq x+2 - 2\sqrt{x+1}$
 دین پاسخ عبارت مثبت است

الف) $y \leq \frac{\sqrt{x^2 - 7x + 6}}{\sqrt{x - 10x + 14}} \quad \textcircled{1} x^2 - 7x + 6 \geq 0 \Rightarrow x \leq 6, x \geq 1$
 $\textcircled{2} x^2 - 10x + 14 \geq 0 \Rightarrow x \leq 1, x \geq 10$
 $Df = \textcircled{1} \cap \textcircled{2} \subseteq (-\infty, 1] \cup (10, +\infty)$

ب) $\frac{x^2 - 7x + 6}{x^2 - 10x + 14} \geq 0 \Rightarrow \frac{(x-1)(x-6)}{(x-2)(x-10)} \geq 0$
 $x \leq 1, 2 \leq x \leq 6, 10 \leq x$
 $Df \subseteq (-\infty, 1] \cup [2, 6] \cup [10, +\infty)$

الف) $\textcircled{1} 2x - 5x + 3 \geq 0 \rightarrow x \leq 1, x \leq \frac{3}{3}$
 $\textcircled{2} 2x^2 - 7x + 4 \geq 0 \rightarrow x \leq 1, x \leq \frac{4}{2}$

$\textcircled{1} \cap \textcircled{2} \subseteq Df \subseteq (-\infty, 1] \cup [\frac{4}{2}, +\infty)$
 $\frac{4}{2} = 2$

ب) $\frac{2x^2 - 5x + 3}{2x^2 - 7x + 4} \geq 0 \rightarrow x \leq 1, x \leq \frac{3}{2}$
 $\rightarrow x \leq 1, x \leq \frac{3}{2}$

$Df = (-\infty, 1] \cup (1, \frac{3}{2}) \cup [\frac{3}{2}, +\infty)$