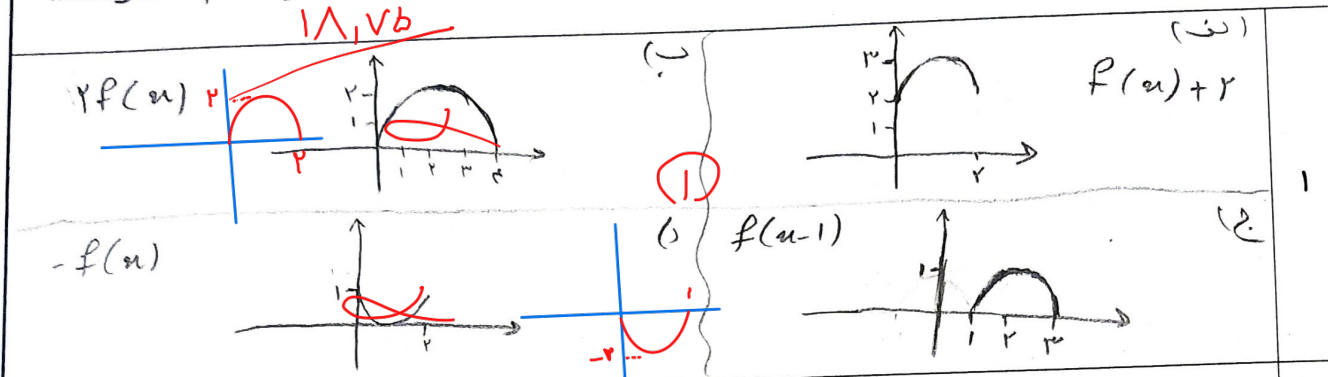




الف) $(x^2 - 2)(x^2 - 3) > 0$ $\frac{+}{-} \frac{+}{-} \frac{+}{-}$ $(-\infty, 2) \cup (3, +\infty)$

ب) $(x-1)(x-5) < 0$ $\frac{+}{-} \frac{+}{-} \frac{+}{-}$ $(1, 5)$

ج) $(x+5)(x+1) \geq 0$ $\frac{-}{+} \frac{-}{+} \frac{-}{+}$ $(-\infty, -5] \cup [-1, +\infty)$

د) $(x-6)(x-1) \leq 0$ $\frac{+}{-} \frac{+}{-} \frac{+}{-}$ $[1, 6]$

الف) $\frac{(x^2 - 1)(x^2 - 2)}{x^2 - x - 5} < 0$ $\frac{+}{-} \frac{+}{-} \frac{+}{-}$ $(-\infty, 1) \cup (2, 5)$

ب) $\frac{(x^2 - 1)(x^2 + 1)}{(x - 5)(x - 1)} \geq 0$ $\frac{-}{+} \frac{+}{-} \frac{+}{-}$ $(-\infty, -1] \cup (5, +\infty)$

الف) $\sqrt{\frac{(x^2 - 1)(x^2 + x + 1)}{x(x-1)(x+1)}} \rightarrow \Delta < 0$ $\frac{-}{+} \frac{+}{-} \frac{+}{-}$ $D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$

ب) $\sqrt{\frac{(x^2 - 4)(x^2 + 5)}{(x-4)(x-1)}}$ $\frac{-}{+} \frac{+}{-} \frac{+}{-}$ $D_f = (-\infty, -4] \cup (1, 4) \cup (4, +\infty)$

الف) $2 - x \geq 0 \rightarrow x \leq 2$ $2 - \sqrt{2-x} \geq 0 \rightarrow \sqrt{2-x} \leq 2 \rightarrow 2-x \leq 4 \rightarrow x \geq -2$ $D_f = [-2, 2]$

ب) $x - 2 \geq 0 \rightarrow x \geq 2$ $3 - \sqrt{x-2} \geq 0 \rightarrow \sqrt{x-2} \leq 3 \rightarrow x-2 \leq 9 \rightarrow x \leq 11$ $D_f = [2, 11]$

المسألة:

الف) $\frac{r}{2} - r^2 \geq 0$ $r^2 \leq r$ $r^2 \leq r$ $-\sqrt{r} \leq r \leq \sqrt{r}$
 $D_f = [-\sqrt{r}, \sqrt{r}]$

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ب) $\frac{r}{2} |u| - 9 \geq 0$ $r |u| \geq 9$ $|u| \geq \frac{9}{r}$ $u \geq \frac{9}{r}$ $u \leq -\frac{9}{r}$
 $D_f = (-\infty, -\frac{9}{r}] \cup [\frac{9}{r}, +\infty)$

الف) $|u| \neq r \rightarrow u \neq \pm r$ $D_f = \mathbb{R} - \{\pm r\}$

ب) $\sqrt{u} \neq r \rightarrow u \neq r^2$ $u \geq 0$

$D_f = [0, r^2) \cup (r^2, +\infty)$

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الف) $r \cos u \neq 1$ $\cos u \neq \frac{1}{r} \rightarrow u \neq \arccos \frac{1}{r}$ $u \neq 2\pi - \arccos \frac{1}{r}$

$D_f = \mathbb{R} - \{k\pi + \frac{\pi}{r}, k\pi + \frac{2\pi}{r}\}$

ب) $r \sin u \neq -1$ $\sin u \neq -\frac{1}{r}$ $u \neq \arcsin(-\frac{1}{r})$ $u \neq \pi - \arcsin(-\frac{1}{r})$ $D_f = \mathbb{R} - \{k\pi + \frac{\pi}{r}, k\pi + \frac{11\pi}{r}\}$

ج) $\cos u \neq 0$ $u \neq \frac{\pi}{2}$ $u \neq \frac{3\pi}{2}$ $\sin u \neq 0$ $u \neq 0$ $u \neq \pi$ $\frac{\cos u}{\sin u} \neq 1 \rightarrow u \neq \frac{\pi}{4}, \frac{5\pi}{4}$
 $D_f = \mathbb{R} - \{k\pi, k\pi + \frac{\pi}{2}\}$

د) $r \sin^2 u \neq r$ $\sin^2 u \neq 1$ $\sin u \neq \pm 1$ $u \neq \frac{\pi}{2}, \frac{3\pi}{2}, \frac{5\pi}{2}, \frac{7\pi}{2}$ $D_f = \mathbb{R} - \{k\pi \pm \frac{\pi}{2}\}$

$y = \frac{1}{\sqrt{r|u-r| - \frac{1}{r}}}$ $r|u-r| - \frac{1}{r} > 0$

$r|u-r| > \frac{1}{r}$ $|u-r| > \frac{1}{r^2}$ $u-r > \frac{1}{r^2}$ $u > \frac{1}{r^2} + r$

$-u+r > \frac{1}{r^2}$ $u < \frac{1}{r^2} + r$ $D_f = \mathbb{R} - [\frac{1}{r^2} + r, \frac{1}{r^2} + r]$

1, 2, 3

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الف) $r - r|u| \geq 0$ $r|u| \leq r$ $|u| \leq 1$ $-1 \leq u \leq 1$

$D_f = [-1, 1]$

ب) $\sqrt{\frac{|u|}{|u|}}$ $|u| \neq 0$ $u \neq 0$ $D_f = \mathbb{R} - \{0\}$

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