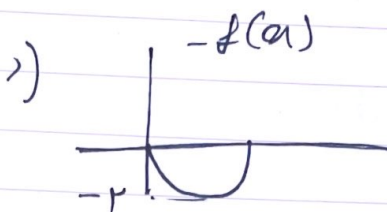
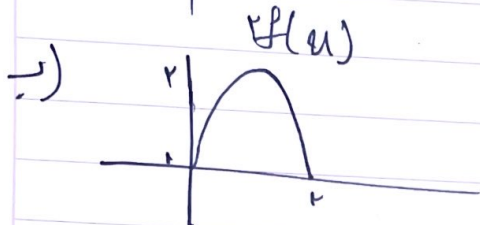
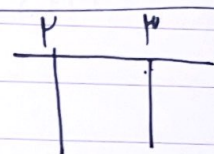


①



الف) $u^2 - 5u + 4 > 0 \rightarrow (u-1)(u-4) = 0 \rightarrow \begin{cases} u=1 \\ u=4 \end{cases}$



②

ب) $u^2 - 9u + 8 < 0 \rightarrow$

$1 < u < 8$

ج) $u^2 + 9u + 5 \geq 0 \rightarrow \begin{cases} u = -1 \\ u = -\frac{5}{2} = -2.5 \end{cases}$

$u \leq -2.5 \text{ or } u \geq -1$

د) $9u^2 - 7u + 2 \leq 0 \rightarrow \begin{cases} u = \frac{1}{3} \\ u = \frac{2}{3} \end{cases}$

$\frac{1}{3} \leq u \leq \frac{2}{3}$

الف) $\frac{u^2 - 3u + 2}{u - 5} < 0$

$u - 5 \neq 0$
 $u \neq 5$

③

$(u-1)(u-2)$ $u=1$ $u=2$

$u \in (-\infty, 1) \cup (2, 5)$

$u=5$ منقطع

$u < 1$ منفی

$2 < u < 5$ منفی

$u > 5$ مثبت

ب) $\frac{u^2 - 1}{u^2 - 9u + 8} \geq 0$

$u^2 - 9u + 8 \neq 0$

$u^2 - 1 = 0 \Rightarrow u^2 = 1$

$(u-1)(u+1)$

$\frac{(u-1)(u+1)}{(u-1)(u-8)} \geq 0$

$u \neq 0$
 $u \neq 1$

$u \in (-\infty, -1) \cup (1, 8)$

$\frac{u+1}{u-8} \geq 0$

$u = -1$ منقطع
 $u = 8$ منقطع

~~$u \in (-\infty, -1) \cup (1, 8)$~~

Subject:

Date: / /

$$\text{الف) } y = \sqrt{\frac{u^3 - 1}{u^3 - u}} = \frac{u^3 - 1}{u^3 - u} \geq 0 \quad \begin{matrix} u^3 - u \neq 0 \\ \cancel{u^3 - u} \quad u \neq 1 \end{matrix} \quad (K)$$

$$\frac{1}{u(u+1)} > 0 \quad u \neq -1$$

$$u = -1 \quad u = 0$$

$$D_f = (-\infty, -1) \cup (0, 1) \cup (1, +\infty)$$

$$\rightarrow) \sqrt{\frac{u^2 - 14}{u^2 - 2u + 2}} = \frac{(u-2)(u+2)}{(u+1)(u-2)} \geq 0 \quad u \neq 2, u \neq -1$$

$$\frac{u+2}{u-1} \geq 0 \quad (u \neq 1)$$

$$u = 1 \quad u = -2$$

$$D_f = [-\infty, -2] \cup (1, 2) \cup (2, +\infty)$$

$$y = \sqrt{4 - \sqrt{2 - u}}$$

(ب) الف

$$2 - u \geq 0 \Rightarrow u \leq 2$$

$$4 - \sqrt{2 - u} \geq 0 \Rightarrow \sqrt{2 - u} \leq 2 \Rightarrow 2 - u \leq 4 \Rightarrow u \geq -2$$

$$D_f = [-2, 2]$$

$$y = \sqrt{3 - \sqrt{u - 1}}$$

$$u - 1 \geq 0 \Rightarrow u \geq 1$$

(ج)

$$3 - \sqrt{u - 1} \geq 0 \Rightarrow \sqrt{u - 1} \leq 3 \Rightarrow u - 1 \leq 9 \Rightarrow u \leq 10$$

$$D_f = [1, 10]$$

$$y = \sqrt{4 - 4u^2}$$

الف

$$4 - 4u^2 \geq 0 \Rightarrow 4u^2 \leq 4 \Rightarrow u^2 \leq 1 \quad D_f = [-1, 1]$$

(د)

$$y = \sqrt{3|u| - 9}$$

(هـ)

$$3|u| - 9 \geq 0 \Rightarrow 3|u| \geq 9 \Rightarrow |u| \geq 3$$

$$D_f = (-\infty, -3] \cup [3, +\infty)$$

Subject:

Date: / /

$$y = \sqrt{\frac{|u|+1}{|u|-3}}$$

$$|u|-3 \neq 0 \Rightarrow |u| \neq 3 \Rightarrow u \neq \pm 3 \quad (\text{الف}) \quad (\checkmark)$$

$$D_f = \mathbb{R} - \{-3, 3\}$$

$$y = \sqrt{\frac{\sqrt{u}+1}{\sqrt{u}-3}}$$

$$\sqrt{u}-3 \neq 0 \Rightarrow \sqrt{u} \neq 3 \Rightarrow u \neq 9 \quad (\text{ب})$$

$$D_f = [0, 9) \cup (9, \infty) \setminus \{9\} = (\infty, 0)$$

$$\text{أ) } y = \frac{\sin u}{\cos u - 1} = \cos u - 1 \neq 0 \Rightarrow \cos u \neq \frac{1}{2} = \cos\left(\frac{\pi}{3}\right) \quad (\text{أ})$$

$$u \neq 2k\pi \pm \frac{\pi}{3} \quad (k \in \mathbb{Z})$$

$$D_f = \mathbb{R} - \left\{ 2k\pi \pm \frac{\pi}{3} \mid k \in \mathbb{Z} \right\}$$

$$\text{ب) } \frac{\cos u + 1}{\sin u + 1}$$

$$\sin u + 1 \neq 0 \Rightarrow \sin u \neq -1 = \sin\left(-\frac{\pi}{2}\right)$$

$$u \neq 2k\pi - \frac{\pi}{2} \quad u \neq 2k\pi + \pi - \left(-\frac{\pi}{2}\right)$$

$$D_f = \mathbb{R} - \left\{ 2k\pi - \frac{\pi}{2}, 2k\pi + \frac{3\pi}{2} \mid k \in \mathbb{Z} \right\}$$

$$\text{ج) } y = \frac{\tan u + 1}{\cot u - 1} = u \neq k\pi \pm \frac{\pi}{4}$$

$$u \neq k\pi \pm \frac{\pi}{4}$$

$$u \neq k\pi$$

$$D_f = \mathbb{R} - \left(\left\{ \frac{k\pi}{4} \mid k \in \mathbb{Z} \right\} \cup \left\{ k\pi + \frac{\pi}{2} \mid k \in \mathbb{Z} \right\} \right)$$

$$\cot u - 1 \neq 0 \Rightarrow \cot u \neq 1$$

$$u \neq k\pi \pm \frac{\pi}{4}$$

Subject:

Date: / /

$$y = \frac{1}{\sqrt{r|a-r| - \frac{1}{r}}} = r|a-r| - \frac{1}{r} > 0 \Rightarrow r|a-r| > \frac{1}{r}$$
$$a-r > \frac{1}{r} \Rightarrow a > \frac{r}{2} \quad D_f = (-\infty, \frac{r}{2}) \cup (\frac{r}{2}, +\infty)$$

$$\text{ii) } y = \sqrt{\varepsilon - r|a|}$$

(1.)

$$r - r|a| \geq 0 \Rightarrow r|a| \leq r \Rightarrow a \leq r \quad D_f = (-r, r)$$

$$\text{ii) } y = \sqrt{\frac{|a|}{a}} \Rightarrow a \neq 0 \quad \frac{|a|}{a} > 0$$

$$(|a|) \rightarrow \text{Cantor} \quad \frac{|a|}{a} > 0 \Leftrightarrow a > 0$$

$$D_f = (0, +\infty)$$