

الف) $\frac{a^3 - 6a}{a^3 - a} > 0 \Rightarrow$

صورت: $a(a-6) > 0$

مخرج: $a(a^2 - 1) > 0$

الف $\Rightarrow a + |a| > 0 \Rightarrow \mathbb{R}^+$

ب $\Rightarrow a|a| > 0 \Rightarrow \mathbb{R}^+$

ب) $\frac{a^3 - a^2}{a^3 - a} > 0$

صورت: $a^2(a-1) > 0$

مخرج: $a(a^2 - 1) > 0$

الف $\Rightarrow a^2(a-1) > 0 \Rightarrow \mathbb{R}^+$

الف $2 - \{a\} > 0 \Rightarrow \{a\} < 2 \Rightarrow (-\infty, 2)$

ب $2 - \{a\} > 0 \Rightarrow \{a\} < 2 \Rightarrow (-\infty, 2)$

الف $\{a + \frac{2}{3} - 1\} + \{a + \frac{2}{3}\} > 0$

$\{a + \frac{2}{3}\} - 1 + \{a + \frac{2}{3}\} > 0 \Rightarrow$

$2\{a + \frac{2}{3}\} > 1 \Rightarrow \{a + \frac{2}{3}\} > \frac{1}{2}$

$a + \frac{2}{3} > \frac{1}{2} \Rightarrow a > \frac{1}{6} \Rightarrow \mathbb{R}^+ = [\frac{1}{6}, +\infty)$

ب $\{a - \frac{1}{3}\} + \{-a + \frac{1}{3}\} > 0$

$\Rightarrow \{a - \frac{1}{3}\} + \{-(a - \frac{1}{3})\} \Rightarrow$

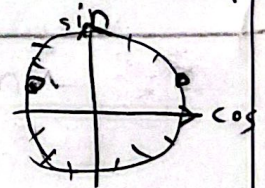
$a \in \mathbb{Z} \Rightarrow \{a\} + \{-a\} = 0$

$a \notin \mathbb{Z} \Rightarrow \{a\} + \{-a\} = -1 \Rightarrow a - \frac{1}{3} \in \mathbb{Z}$

$\Rightarrow a \in \mathbb{Z} + \frac{1}{3} \Rightarrow \{a|a = k + \frac{1}{3}, k \in \mathbb{Z}\}$

الف $2 \sin a - 1 \neq 0 \Rightarrow 2 \sin a \neq 1 \Rightarrow \sin a \neq \frac{1}{2} \Rightarrow$

$\mathbb{R} - \{k\pi + \frac{\pi}{6}\}$



ب $2 \sin^2 a - 1 \neq 0 \Rightarrow 2 \sin^2 a \neq 1 \Rightarrow \sin^2 a \neq \frac{1}{2} \Rightarrow \sin a \neq \pm \frac{\sqrt{2}}{2}$

$\Rightarrow \mathbb{R} - \{k\pi + \frac{\pi}{4}\}$

① $x \sin \alpha - 1 > 0 \Rightarrow x \sin \alpha > 1 \quad \sin \alpha > \frac{1}{x} \Rightarrow$
 $(2k\pi + \frac{\pi}{2}, 2k\pi - \frac{\pi}{2})$

② $\cos \alpha - 1 > 0 \Rightarrow \cos \alpha > 1 \Rightarrow \{2k\pi + \frac{\pi}{2}\}$

③ (اف) $-1 \leq |a| - 2 \leq 1 \Rightarrow -2 \leq |a| \leq 3 \Rightarrow$
 $[-3, 3]$

$x \leq |a| \Rightarrow 1, 2, 3, 4, 5$
 $|a| \leq 5 \Rightarrow$
 $1, 2, 3, 4, 5$

$x = -1 \leq a^2 + 3a + 1 < 1 \Rightarrow -2 \leq a^2 + 3a \leq 0 \Rightarrow$
 $-2 \leq a(a+3) \leq 0$

الف $\Rightarrow 2 - \log_2^{(a-2)} > 0 \quad \log_2^{(a-2)} \leq 2 \Rightarrow a-2 \leq 4 \Rightarrow$
 $a \leq 11 \Rightarrow (-\infty, 11]$

ب $= a^3 - a > 0$
 $a(a^2 - 1) > 0 \Rightarrow \frac{-1 \ 0 \ 1}{-1 \ 1 \ -1} \Rightarrow (-1, 0) \cup (1, +\infty)$

④ (اف) $\Rightarrow \varepsilon^a + 1 \neq 0 \quad \varepsilon^a \neq -1 \Rightarrow \mathbb{R}$

ب $\Rightarrow \varepsilon^a - 1 \neq 0 \Rightarrow \varepsilon^a \neq 1 \Rightarrow \mathbb{R} \setminus \{0\}$

ج $= \varepsilon^a - 2 \Rightarrow \varepsilon^a - 2 \neq 0 \Rightarrow \varepsilon^a \neq 2 \quad \mathbb{R}$

د $= \varepsilon^a - 3 \neq 0 \Rightarrow \varepsilon^a \neq 3 \quad \mathbb{R}$ نفساً يا سواك افه رابا نوپايسم حل كړي؟

الف $= \varepsilon a + 1 \in \mathbb{W} \Rightarrow \varepsilon a \in \mathbb{W} - 1 \Rightarrow \varepsilon a \in \mathbb{W} - 1 \Rightarrow a \in \frac{\mathbb{W} - 1}{\varepsilon}$

$P_F = \{a \mid a = \frac{k-1}{\varepsilon} \text{ و } k \in \mathbb{W}\}$

ب $= \frac{\varepsilon a - 2}{\varepsilon a - 0} \in \mathbb{W} \Rightarrow \varepsilon a - 2 \in \varepsilon \mathbb{W} a - 0 \mathbb{W} \Rightarrow \varepsilon a - 2 \mathbb{W} a \in -0 \mathbb{W} + 2$
 $\Rightarrow a \in \frac{-0 \mathbb{W} + 2}{\varepsilon - 2 \mathbb{W}} \Rightarrow P_F = \{a \mid a = \frac{-0k + 2}{\varepsilon - 2k} \text{ و } k \in \mathbb{W}\}$