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الف) $y = \frac{k+1}{|k_{n+1}| - |k+1|}$

$|k_{n+1}| - |k+1| \neq 0 \Rightarrow |k_{n+1}| \neq |k+1|$

$k_{n+1}^2 + 1 + \varepsilon_n \neq k_{n+1}^2 + 9 + 4k_n \rightarrow k_{n+1}^2 - k_n^2 - 1 \neq 0 \rightarrow k_{n+1}^2 - k_n^2 - 2\varepsilon - 2k_n - 9k_{n+1} + \varepsilon$

$k = \frac{4}{3} \Rightarrow k = \frac{-\varepsilon}{3} \quad D_f = R - \left\{ \frac{-\varepsilon}{3} \right\}$

ب) $y = \sqrt{|k_{n+1}| - |k+1|}$

$|k_{n+1}| - |k+1| \geq 0 \Rightarrow |k_{n+1}| \geq |k+1| \rightarrow$

$k_{n+1}^2 + 1 + \varepsilon_n \geq k_{n+1}^2 + 9 + 4k_n \rightarrow k_{n+1}^2 - k_n^2 - 1 \geq 0 \rightarrow k_{n+1}^2 - k_n^2 - 2\varepsilon \geq 0 \rightarrow k_{n+1}^2 - k_n^2 \geq 2\varepsilon$

$D_f = (-\infty, -\frac{\varepsilon}{3}] \cup [\frac{\varepsilon}{3}, +\infty)$

الف) $1 - \log_2 k$

$\log_2 k < 1$

$k < 2$

$D_f = (k > 2) \Rightarrow$

$P_f = (2, 2)$

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ب) $\log_2 (1 - \log_2 \frac{1}{k})$

$\rightarrow k > 0, 1 - \log_2 \frac{1}{k} > 0$

$k > \frac{1}{2} \rightarrow$

$D_f = (\frac{1}{2}, +\infty)$

$f(x) = \sqrt{\log_2 \frac{k-1}{2}}$

$k-1 > 0 \Rightarrow k > 1$

$\log_2 (k-1) > 0 \Rightarrow k-1 > 1 \rightarrow k > 2$

$\log_2 \frac{k-1}{2} > 0 \Rightarrow \log_2 (k-1) > 1 \rightarrow k-1 > 2 \rightarrow k > 3$

$P_f = (3, 3)$

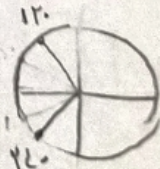
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الف) $(\cos x + 1)$

$\log$

$\rightarrow \cos x + 1 > 0 \rightarrow \cos x > -1 \rightarrow \cos x = -1$

$\rightarrow \cos x = -1$



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$D_f = \left\{ k \in \mathbb{R} : \frac{k}{3} \leq k \leq \frac{k}{3} \right\}$

ب) $y = \sqrt{\log_2 \frac{k-1}{k+1}}$

$\frac{k-1}{k+1} > 0 \Rightarrow \frac{-1}{+1} > \frac{+1}{+1} \Rightarrow \log_2 \frac{k-1}{k+1} > 0$

$\rightarrow \frac{k-1}{k+1} > 1 \rightarrow \frac{k-1-k-1}{k+1} > 0$

$\rightarrow \frac{k-1-k-1}{k+1} > 0$

$\rightarrow \frac{k-1-k-1}{k+1} > 0$

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

$\frac{-1}{+1} > 0$

$\rightarrow D_f = (-\infty, -1)$

$$f(u) = \sqrt{a+ru+u^2+b}$$

↓
! remember

$$\rightarrow a+r=0 \rightarrow a=-r$$

$$\underbrace{-r \times r}_{-4} + b = 0 \rightarrow \boxed{b = +4}$$

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$$f(u) = \sqrt{u^2 + ru + r - m^2}$$

$$\Delta \geq 0 \rightarrow F - F(r - m^2) \geq 0 \rightarrow F - 1 + F_{m^2} \geq 0$$

$$F_{m^2} - \varepsilon \geq 0 \rightarrow F_{m^2} \geq \varepsilon \rightarrow m^2 \leq 1 \rightarrow 1 < m < 1$$

$$1 - (-1) \leq \sqrt{r}$$

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$$f(u) = \sqrt{\varepsilon - u^2}$$

$\frac{[u] + [-u] + 1}{2}$

$$\rightarrow \varepsilon - u^2 \geq 0 \quad u^2 \leq \varepsilon \rightarrow -\sqrt{\varepsilon} \leq u \leq \sqrt{\varepsilon}$$

$$\boxed{\varepsilon - u^2 \geq 0}$$

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