

الف) $\frac{(n-1)^2 - n^2}{n(n-1)} \geq 0 \rightarrow (n-1)^2 - n^2 = n^2 - 2n + 1 - n^2 = 1 - 2n$ $\frac{1-2n}{n(n-1)} \geq 0 \rightarrow \frac{1}{n} \geq 2$

$D_f = (-\infty, 0) \cup [\frac{1}{2}, +\infty)$

ب) $\frac{3}{n-1} + \frac{1}{n+2} \neq 0 \rightarrow \frac{3(n+2) + (n-1)}{(n-1)(n+2)} = \frac{3n+6+n-1}{(n-1)(n+2)} \rightarrow \frac{4n+5}{(n-1)(n+2)}$
 $4n+5 \neq 0 \rightarrow n \neq -\frac{5}{4}$ $D_f = \mathbb{R} - \{-2, -1, -\frac{5}{4}, 0, 1\}$
 $n \neq 1$ $n \neq -2$
 $n \neq 0$
 $n \neq -1$ $n \neq \frac{5}{4}$

الف) $(\frac{1}{n})^n - 9 \geq 0 \rightarrow D_f = (-\infty, -2) \cup (\frac{9}{4}, +\infty)$ $\frac{-2}{1} \frac{9}{1} +$
 $n = -2 \leftarrow$ $n = \frac{9}{4} \rightarrow$

ب) $n-1 \geq 0 \rightarrow n \geq 1$

$\sqrt[n]{n+1} = 3 - \sqrt[n]{n-1} \rightarrow 3 - \sqrt[n]{n-1} \geq 0 \rightarrow (3 \geq \sqrt[n]{n-1})^n \rightarrow n \leq 12$

$D_f = [1, 12]$

$3 - an - n^2 = 0 \rightarrow n^2 + an - 3 = 0$ $\rightarrow$ ضرب = -3
~~.....~~ $\text{ع.} = a$
~~.....~~ $b, -2: \text{ضربها}$

$-2 \times b = -3 \rightarrow b = \frac{3}{2}$
 $-2 + \frac{3}{2} = a \rightarrow a = -\frac{1}{2}$

$a+b = \frac{3}{2} - \frac{1}{2} = 1$

جواب سوال 4

$n^2 - 1 \geq 0 \rightarrow n^2 \geq 1$ $n \geq 1$ $n \leq -1$

$f(n) = \log_e \frac{(n^2 - n - 2)}{2} \rightarrow \frac{(n-2)(n+1)}{2}$ $\frac{6-1}{2}$

$\frac{\sqrt{n^2 - 1} + 1}{+ \text{مخرج}}$

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

$f(n) - n \geq 0 \rightarrow$

$n \geq 1 \rightarrow 3n - 2 - n \geq 0 \rightarrow 2n - 2 \geq 0$

$n < 1 \rightarrow 2n + 3 - n \geq 0$ $n + 3 \geq 0 \rightarrow n \geq -3$

$D_f = [-3, +\infty)$

$$\underbrace{\sin \frac{\pi}{r}}_{\frac{\sqrt{r}}{r}} + \underbrace{(\cos \frac{\pi}{r})}_1 \rightarrow f(1 + \frac{\sqrt{r}}{r})$$

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$$r \times (1 + \frac{\sqrt{r}}{r}) - r(1 + \frac{\sqrt{r}}{r}) \rightarrow r(\frac{r}{r} + \sqrt{r}) - r - r\sqrt{r} =$$

$$\frac{r}{r} + r\sqrt{r} - r - r\sqrt{r} = \frac{r}{r} - r = \underline{\underline{-\frac{1}{r}}}$$

$$f(\frac{a+1}{a-1}) = a \rightarrow \frac{\frac{a+1}{a-1} + 1 + \frac{a-1}{a-1}}{\frac{a+1}{a-1} - 1} = a \rightarrow \frac{\frac{r a}{r}}{r} = a$$

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$$\underline{a \in \mathbb{R} - \{1\}}$$

الاشارة الى

$$g(a) = y \rightarrow y^r - ay = -r$$

$$y^r - ay + r = 0 \rightarrow (y - r)^r = 0 \rightarrow y = r$$

$$\sqrt{a^r - 1} = r \rightarrow a^r - 1 = r \rightarrow a^r = a \rightarrow a = \pm \sqrt{a}$$

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$$f(r) \Rightarrow n=1: 1 - a + r = r$$

$$f(-r) \Rightarrow n=-r: r^r + r^0 + r = r^r$$

$$\underline{\sqrt{r} \times r = 1 \text{ ع } r}$$

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$$r \cos^r + \omega \cos = \underbrace{r}_r, \omega$$

$$r \cos^r + 1 \cos = r \rightarrow r \cos^r + 1 \cos - r = 0 \rightarrow \cos = t$$

$$r t^r + 1 t - r = 0 \rightarrow t = \frac{-1 \pm \sqrt{1}}{r} \rightarrow t = \frac{1}{r} \rightarrow \cos = \frac{1}{r}$$

$$\underline{\tan \alpha = r}$$

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