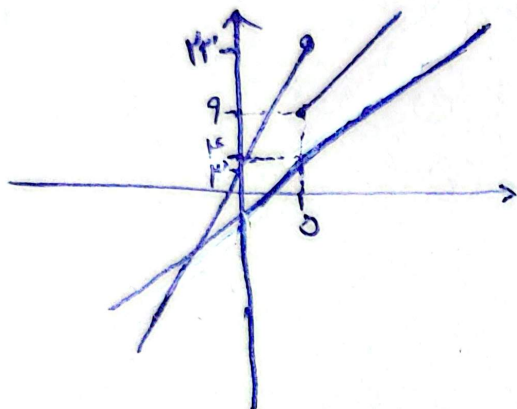


$$f(n) - n + 1 \geq 0 \rightarrow f(n) \geq n - 1$$

(۱) (۲)

$$f(n) = \begin{cases} n - 1 & [n] > \varepsilon \rightarrow n \geq a \\ \varepsilon n + c & [n] \leq \varepsilon \rightarrow n < a \end{cases}$$



$$n - 1 = \varepsilon n + c \rightarrow n = \frac{-c}{\varepsilon}$$

$$D_y = \left[\frac{-c}{\varepsilon}, +\infty \right) \checkmark$$

$$y = \frac{1\varepsilon n^5 + 3\varepsilon n^2 + 1n + c}{(\varepsilon n^2 + \varepsilon n + 1)^2} = \frac{3(1n + 1)^3}{((1n + 1)^2)^2} = \frac{3}{1n + 1} \checkmark$$

(۲) (۳)

$$1n + 1 \neq 0 \rightarrow n \neq \frac{-1}{1} \quad D_y = \mathbb{R} - \left\{ \frac{-1}{1} \right\} \checkmark$$

$$n = 0 \rightarrow f(0) = g(0) \rightarrow \frac{-r}{-1} = a + c \rightarrow \boxed{c = r} \checkmark$$

(۲) (۴)

$$n = 1 \rightarrow f(1) = g(1) \rightarrow \frac{a+r}{1+b} = \frac{1+r}{c} \rightarrow a+r = 3+c \rightarrow a-3b = 1$$

$$n = -1 \rightarrow f(-1) = g(-1) \rightarrow \frac{-a+r}{-1+b} = \frac{-1+r}{1} \rightarrow -a+r = -1+b \rightarrow -a-b = -c$$

$$b + c = \frac{1}{r} + r = \left(\frac{a}{r} \right) \checkmark$$

$$\begin{aligned} -\varepsilon b &= -r \\ \hookrightarrow \boxed{b = \frac{1}{r}} \checkmark \end{aligned}$$

$$\frac{z^r - 1}{z^r + az + b} = \frac{(n-1)(n+1)}{z^r + az + b} = \frac{n+1}{n-c} \quad (r) \quad (E)$$

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 $z^r + az + b = (n-1)^r$

$$z^r + az + b = (n-1)^r \quad \begin{cases} a = -r \\ b = 1 \end{cases}$$

$$n - c = n - 1 \rightarrow c = 1$$

$$a + b + c = -r + 1 + 1 = 0$$

$$\begin{aligned} g(n) &= f(n+1) + f(1-n) = ((n+1-r)^r (n+1-1)) + ((1-n-c)^r (1-n-1)) \\ &= ((n-r)^r (n)) + ((-n-r)^r (-n)) = n(n^r - rn + r - n^r - rn - r) \\ &= \boxed{-1n^r} \quad (r) \quad (a) \end{aligned}$$

$$f(-1) + f(c) = r + 1 = 0 \quad (r) \quad (i)$$

$$f(-1) \rightarrow f(1-rn) = f(-1) \rightarrow 1-rn = -1 \rightarrow n = 1$$

$$n = 1, \quad r\sqrt{1} = 0 \quad (E)$$

$$f(c) \rightarrow f(1-rn) = f(c) \rightarrow 1-rn = c \rightarrow n = -1$$

$$n = -1, \quad r\sqrt{-1} + r = 0 \quad (i)$$

$$f(y) = f(n + \sqrt{r}) \rightarrow y = 2c + \sqrt{r} \xrightarrow{\sqrt{r} = t} t^r + t - y = 0 \quad (r) \quad (v)$$

$$\rightarrow (t+c)(t-r) = 0 \quad \begin{cases} t = -c \sqrt{r} \\ t = r \rightarrow \sqrt{r} = r \rightarrow n = r \end{cases}$$

$$f(y) = (r)^r + r \times r = 2r^2 \quad (r) \quad (v)$$

$$f(n-1) + f(1-n) = f(n-1) + f(-(n-1)) \xrightarrow{n-1=t} f(t) + f(-t) = 0 \quad (2) \quad (1)$$

$$f(n) + f(-n) = (n^c + n) + (-n^c - n) = 0 \xrightarrow{n=t} f(t) + f(-t) = 0$$

$$D_f \cap D_g = \{1\}$$

(2) (1)

$$b - \varepsilon n \geq 0 \rightarrow n \leq \frac{b}{\varepsilon} \rightarrow \frac{b}{\varepsilon} = 1 \rightarrow b = \varepsilon$$

$$\varepsilon n - \varepsilon a \geq 0 \rightarrow n \geq \frac{\varepsilon a}{\varepsilon} \rightarrow \frac{\varepsilon a}{\varepsilon} = 1 \rightarrow a = \frac{\varepsilon}{\varepsilon}$$

$$n=1 \rightarrow r f_n - g(n) = r(k-1) - rk = -k - r$$

$$-k - r = k \rightarrow k = -1$$

$$ra - \frac{b}{r} - k = r \times \frac{\varepsilon}{\varepsilon} - \frac{\varepsilon}{r} - (-1) = 0$$

$$D_g \cap D_f = [-1, v]$$

(2) (1)

$$r n + r \geq 0 \rightarrow n \geq -1 \rightarrow D_g = [-1, +\infty) \rightarrow D_f = (-\infty, v]$$

$$m - n \geq 0 \rightarrow m \geq n \rightarrow m = v$$

$$f(c) - g(c) = r + n - r\sqrt{r} = 4\sqrt{r} \rightarrow n = 4\sqrt{r} - r$$

$$m + n = v + 4\sqrt{r} - r = \boxed{v + 4\sqrt{r}}$$