

19, 2

داده شده: f در $\mathbb{R}$ به صورت زیر تعریف شده است:

$$D_f(u) = [-1, 1]$$

(2) ①

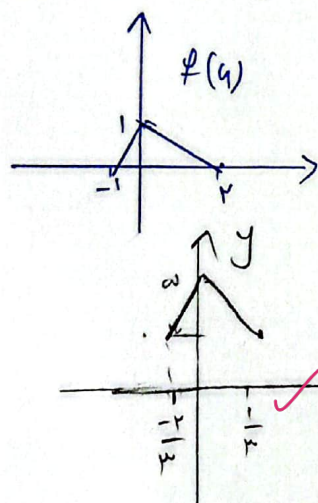
$$f\left(\frac{u_n + v}{2}\right) \rightarrow -1 \leq \frac{u_n + v}{2} \leq 1 \rightarrow -1 \leq u_n + v \leq 2 \rightarrow -1 \leq u \leq 1 \rightarrow -1 \leq x \leq 1 \checkmark$$

$$f(u_n - v) \quad D_f = [-1, 1] \rightarrow \begin{aligned} u_n - v - v &= -1 \\ u_n - v &= v \end{aligned} \rightarrow D = [-1, 1] \checkmark$$

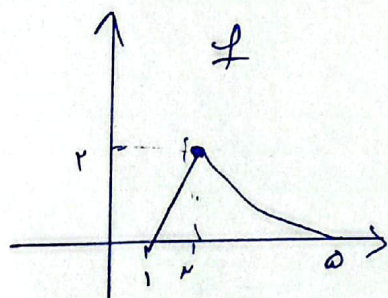
(2) ②

$$f\left(\frac{u_n + 1}{v}\right) \quad D = [-1, 1] \rightarrow -1 \leq x \leq 1 \xrightarrow{x \cdot 1/2} -1/2 \leq 1/2 \leq 1/2 \xrightarrow{+1/2} -1 \leq 1 - 0 \leq 2 \rightarrow -1 \leq -0 \leq 1 \xrightarrow{\div -1} \frac{1}{-1} \geq \frac{1}{1} \geq \frac{1}{2} \checkmark$$

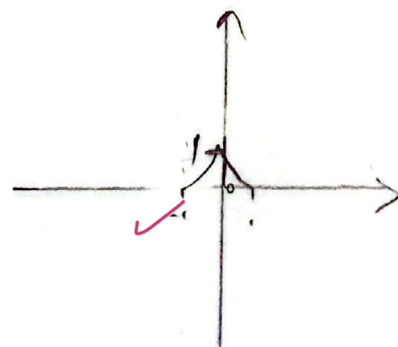
(2) ③



$$\begin{aligned} -1 \leq x \leq 1 &\xrightarrow{\frac{1}{2}x} -1/2 \leq x \leq 1/2 \xrightarrow{x \cdot \frac{1}{2}} -1/4 \leq x \leq 1/4 \\ &\Rightarrow 0 \leq y \leq 1 \xrightarrow{x \cdot 2} 0 \leq 2y \leq 2 \rightarrow 1 \leq y + 1 \leq 3 \end{aligned}$$



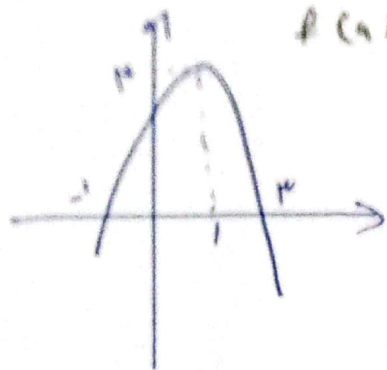
$$\begin{aligned} 0 \leq x \leq 1 &\xrightarrow{\frac{1}{2}x} 0 \leq x \leq 1/2 \xrightarrow{x \cdot \frac{1}{2}} 0 \leq x \leq 1/4 \\ 0 \leq y \leq 1 &\xrightarrow{x \cdot \frac{1}{2}} 0 \leq \frac{y}{2} \leq 1/2 \end{aligned}$$



(2) ④

$$y = \frac{1}{n} x^2 + \frac{1}{2} x + 1$$

$$3 = \frac{1}{n} (n-1)^2 + \frac{1}{2} (n-1) + 1 \rightarrow \frac{1}{n} (n-1)^2 = -\frac{1}{2} (n-1) \rightarrow |n-1| = \frac{1}{2} \begin{cases} n=1 \\ n=3 \end{cases}$$



$$f(x) = a(x-1)^2 + 2$$

$$0 = f(0) + 2 \rightarrow a = -1 \rightarrow -x^2 + 2x + 2$$

در این مرحله باید به دنبال ضرایب میگردیم. $y = \frac{1}{n} x^2 + \frac{1}{2} x + 1$

$$\left| \frac{1}{n} \right| \xrightarrow{\frac{1}{n}} \left| -\frac{1}{n} \right| \xrightarrow{\frac{1}{n}} \left| -\frac{1}{n} \right|$$

$$\left| -\frac{1}{n} \right| \xrightarrow{x^2} \left| -\frac{1}{n} \right| \xrightarrow{-1} \left| -\frac{1}{n} \right| \rightarrow \Delta B = +\frac{1}{n}$$

صفتی آخر

$$D_f = (a, b], D_g = [-r, b)$$

$$\oplus = f(n+1) + g(a+1) \quad D_g = (-r, a)$$

$$(a+1, a] \cap [-r, b-1] = (-r, a) \rightarrow a+1 = -r \rightarrow a = -r-1 \quad b-1 = a \rightarrow b = a+1$$

$$D_g = [-r, a] \rightarrow -r \leq x \leq a \rightarrow -\frac{1}{r} \leq \frac{x}{r} + 1 \leq \frac{a}{r} + 1, D_f = [-1, r] \rightarrow -1 \leq y \leq r$$

$$0 \leq \sqrt{r} f(x) - w \leq \sqrt{a} \rightarrow D_f = [0, \sqrt{aw}]$$

$$f(x) = \left| \frac{x+1}{x+1} \right| \quad f(x) = \left| \frac{x+1}{x+1} \right| \xrightarrow{\frac{-1}{x+1}} \left| \frac{x-r+1}{x(r-x)+1} \right| + 1 \rightarrow g(x) = \left| \frac{-1+x}{-r+x} \right| + 1$$

$$g(x) + x < 0 \rightarrow x + \left| \frac{x-1}{x-r} \right| + 1 < 0 \rightarrow x+1 < 0 \rightarrow x < -1 \rightarrow x-1 < -r \rightarrow x-r < -a$$

$$x + g(x) < 0 \rightarrow x+1 + \left| \frac{x-1}{x-r} \right| < 0 \rightarrow x+1 + \frac{x-1}{x-r} < 0 \rightarrow \frac{(x^2-r)x}{-r+x} < 0$$

$$-r+x > 0 \rightarrow \frac{-r+x}{-r+x} < 0 \rightarrow \frac{-r+x}{-r+x} < 0 \rightarrow \frac{-r+x}{-r+x} < 0$$

$$\begin{aligned} \text{رأس} \left| \begin{array}{c} 1 \\ r \end{array} \right. &\Rightarrow \begin{cases} r_u + r = 1 \rightarrow u = \frac{-1}{r} \Rightarrow \alpha = \frac{-1}{r} \\ y = 1 - r f(1) = 1 - r(f) = -v \Rightarrow \beta = -v \end{cases} \Rightarrow \alpha\beta = \boxed{\frac{v}{r}} \end{aligned}$$

-v