

(تکلیف)

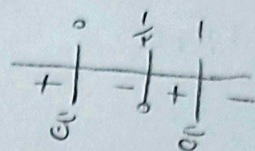
(فاصله شکرانی)

(بازدهم)
B دفتر

$$f(n) = \sqrt{\frac{n-1}{n} - \frac{n}{n-1}}$$

$$\frac{n-1}{n} - \frac{n}{n-1} \geq 0$$

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



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

[1]

$$f(n) = \frac{1}{n+1} - \frac{2}{n}$$

$$= \frac{n}{n(n+1)} - \frac{2(n+1)}{n(n+1)} = \frac{n - 2n - 2}{n(n+1)} = \frac{-n-2}{n(n+1)}$$

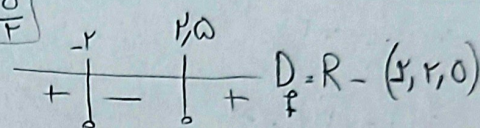
$$n \neq 0, -1, 1, -2$$

$$\frac{n}{n-1} + \frac{1}{n+2} \neq 0 \Rightarrow \frac{n^2 + 4n - 1}{(n-1)(n+2)} = \frac{n+0}{(n-1)(n+2)} \rightarrow n \neq \frac{0}{1}$$

$$D_f = \mathbb{R} - \{-2, -\frac{0}{1}, -1, 0, 1\}$$

$$f(n) = \sqrt{\left(\frac{1}{n}\right)^n - 9} (3n - 4^n) \rightarrow 3^2 = 3^2 = 3^{2n} \quad \left(n = \frac{0}{1}\right)$$

$$\left(\frac{1}{n}\right)^n - 9 \geq 0 \Rightarrow 3^{-n} - 9 = 0 \Rightarrow 3^{-n} = 9 \Rightarrow 3^{-n} = 3^2 \Rightarrow n = -2$$



$$D_f = \mathbb{R} - (1, 2, 0)$$

$$\sqrt{n-1} + \sqrt{y+1} = 3 \quad \left. \begin{array}{l} n-1 \geq 0 \quad n \geq 1 \\ \sqrt{y+1} = 3 - \sqrt{n-1} \geq 0 \\ 3 \geq \sqrt{n-1} \\ 9 \geq n-1 \rightarrow 10 \geq n \end{array} \right\} D_f = [1, 10]$$

[2]

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

$$(n-2)(n+1) > 0 \Rightarrow \frac{-1}{+} \frac{2}{-} \rightarrow (-\infty, -1) \cup (2, +\infty)$$

(1)

$$\left. \begin{array}{l} n^2 - 1 \geq 0 \quad n^2 \geq 1 \\ n \geq 1 \\ n \leq -1 \end{array} \right\} (2)$$

$$(1) \cap (2) = (-\infty, -1) \cup (2, +\infty)$$

[3]

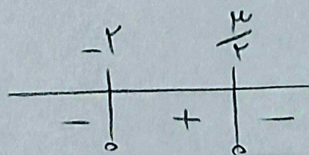
$$f(n) = \sqrt{3 + an - n^2}$$

$$D_f = [-2, b]$$

$$a+b=?$$

$$\left. \begin{array}{l} -n^2 + an + 3 \geq 0 \\ -(-2)^2 + a(-2) + 3 = 0 \\ -4 - 2a + 3 = 0 \rightarrow -1 = 2a \rightarrow a = -\frac{1}{2} \end{array} \right\} -n^2 - \frac{1}{2}n + 3 \geq 0$$

$$\left(-\frac{1}{2}\right) + \left(\frac{3}{2}\right) = \frac{2}{2} = 1$$



$$\Delta = \frac{1}{4} - 4(-1)(3) = \frac{49}{4}$$

$$\frac{1}{2} \pm \sqrt{\frac{49}{4}} = \frac{1}{2} \pm \frac{7}{2} \Rightarrow \frac{8}{2} = 4 \quad \frac{-6}{2} = -3$$

[4]

$$f(n) = \begin{cases} 3n-2 & ; n \geq 1 \\ 3n+3 & ; n < 1 \end{cases}$$

$$g(n) = \sqrt{f(n) - n}$$

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

این اعداد بزرگتر از صفر است
و این اعداد کوچکتر از 1 از صفر است

$$\rightarrow [-3, +\infty)$$

[5]

$$n < 1 \rightarrow \sqrt{3n+3-n} = \sqrt{n+3}$$

$$\left. \begin{array}{l} n+3 \geq 0 \\ n \geq -3 \end{array} \right\}$$

$$f(n) = \begin{cases} (a+1)(n+r) & ; n > 1 \\ ra + rn & ; n \leq 1 \end{cases}$$

$$r f(a) = f(-r) + a$$

$$a = ?$$

$$r(a+1)(r) = ra + r(-r) + a$$

$$1ra + 1r = ra - r^2$$

$$1_0 a = -1A$$

$$\boxed{a = \frac{-1A}{1_0}}$$

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$$f(n) = \sqrt{n} + \frac{1}{\sqrt{n}} + r =$$

$$f(r-\sqrt{r}) + f(r+\sqrt{r}) = ?$$

$$\begin{aligned} \sqrt{r-\sqrt{r}} + \sqrt{\frac{1}{r-\sqrt{r}}} + r + \sqrt{r+\sqrt{r}} + \sqrt{\frac{1}{r+\sqrt{r}}} + r &= r + r\sqrt{r-\sqrt{r}} + r\sqrt{r+\sqrt{r}} \\ &= r + \sqrt{r}(\sqrt{r-\sqrt{r}} + \sqrt{r+\sqrt{r}}) = \\ &= r + \sqrt{r}(\sqrt{r}-1 + \sqrt{r}+1) = \boxed{r\sqrt{r} + r} \end{aligned}$$

U

$$r f(n) - r f(-n) = f(n^r - n)$$

$$f(n) = ?$$

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$$- \partial f(n) = r \cdot n^r + n \rightarrow f(n) = f(n^r) - \frac{1}{\partial} n$$

$$\leftarrow \begin{pmatrix} n \\ -n \end{pmatrix}$$

$$\leftarrow \begin{pmatrix} n \\ -n \end{pmatrix}$$

1

$$(n+r)f(n) - rn f(n+r) = f(n^r - mn + rm - 1)$$

$$f(0) = ?$$

$$n=0 \rightarrow (r)f(0) = rm - 1 \rightarrow f(0) = \frac{rm - 1}{r}$$

$$n=-r \rightarrow (r)f(0) = 1q + \partial m - 1 \rightarrow f(0) = \frac{10 + \partial m}{4}$$

$$\frac{rm - 1}{r} = \frac{10 + \partial m}{4r}$$

$$9m - r = 10 + \partial m$$

$$m = \frac{1A}{r} = \frac{9}{r}$$

$$f(0) = \frac{r \frac{1A}{r} - 1}{r} = \frac{\partial \cdot 0}{1A} = \frac{10}{r}$$

9

$$r = 1/r' f(-1) \text{ مقلوب } f(n) + f\left(\frac{1}{n}\right) = \frac{r n^r - 1 r n + r}{n}$$

$$an + b + a \frac{1}{n} + b = a \left(\frac{1}{n} + n \right) + b$$

$$\frac{r n^r}{n} - \frac{1 r n}{n} + \frac{r}{n} = r n - 1r + \frac{r}{n} = r \left(\frac{1}{n} + n \right) - 1r$$

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$$f(-1) = r(-1) - 9 = -9$$

$$\boxed{a = r, b = -9}$$