

کلاس: یازدهم دختر C

تکلیف شماره: 6

نام و نام خانوادگی: فاطمه زهرا جمال زاده

$$f(n) = \begin{cases} (n+1)(n+2) & n > 1 \\ 2a + 2n & n \leq 1 \end{cases}$$

$$2f(a) = f(-2) + a \rightarrow$$

$$f(-2) = 2a - 2$$

$$2f(a) = 4a - 2$$

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

$$2a - 2 = 2a + 2$$

$$a = \frac{-2}{0} = -1/1$$

$$\left. \begin{aligned} A &= \sqrt{2-\sqrt{3}} \\ B &= \sqrt{2+\sqrt{3}} \end{aligned} \right\} \rightarrow \begin{aligned} A &= \frac{1}{B} \\ B &= \frac{1}{A} \end{aligned}$$

$$f(A) = A + \frac{B}{A} + 2$$

$$f(B) = B + \frac{A}{B} + 2$$

$$\rightarrow f(A) + f(B) = 2A + 2B + 2 = 2\sqrt{4} + 2$$

$$\rightarrow 2(A+B) + 2 = (A+B)^2 = A^2 + B^2 + 2AB$$

$$= 2 - \sqrt{3} + 2 + \sqrt{3} + 2(1) = 4$$

$$\rightarrow (A+B)^2 = 4 \rightarrow A+B = \sqrt{4}$$

$$A \times B = \sqrt{4-3} = 1$$

$$\begin{aligned} (2f(n) - 3f(-n) &= 4n^2 - n) \times 2 \\ (2f(-n) - 3f(n) &= n + 4n^2) \times 2 \end{aligned}$$

$$\rightarrow \begin{aligned} 4f(n) - 6f(-n) &= 8n^2 - 2n \\ 4f(-n) - 6f(n) &= 2n + 8n^2 \end{aligned}$$

$$\rightarrow -2f(n) = 2n + 2n$$

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

$$n=0 \rightarrow 2f(0) = 3m-1$$

$$n=-2 \rightarrow 4f(0) = 2m+12$$

$$9m-2 = 2m+12$$

$$m = \frac{9}{7}$$

$$f(0) = \frac{3m-1}{2} \xrightarrow{m=\frac{9}{7}} f(0) = \frac{25}{14}$$

$$f(n) + f\left(\frac{1}{n}\right) = \frac{3n^2 - 12n + 3}{n} \xrightarrow{n=1} 2f(-1) = \frac{3+12+3}{-1} \Rightarrow f(-1) = -9$$

$$Df = Dg = (-\infty, 1]$$

$$g_n = -\sqrt{(1-n)^2} = (n-1)\sqrt{1-n} \Rightarrow g_n = f_n$$

تابع برابرند

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

$$g(n) = \sqrt{n^3}$$

$$Dg = Df = [0, +\infty)$$

$$f(n) = g(n) \rightarrow \text{تابع ها برابرند}$$

تابع ها برابرند

(v)

$$f(n) = [\sqrt{n} - \lfloor \sqrt{n} \rfloor] \rightarrow f_n = 0 \rightarrow Df = [0, +\infty)$$

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

$$\rightarrow \begin{pmatrix} + \\ - \\ 0 \end{pmatrix} \rightarrow Dg = [0, +\infty)$$

$$\rightarrow g_n = 0$$

$$\Rightarrow Df = Dg$$

$$g_n = f_n$$

تابع ها برابرند

(vi)

$$\text{الف)} \frac{f(1) + g(1)}{f(1) - g(1)} = \frac{1+1}{1-1} = \boxed{\infty} \rightarrow (1, \infty)$$

(9)

$$\text{ب)} \frac{f(2) + g(2)}{f(2) - g(2)} = \frac{2+2}{2-2} = \frac{4}{0} \rightarrow \boxed{\infty} \rightarrow (2, \infty)$$

$$\text{ج)} f(1)g(1) = 0 \times (1) = 0$$

$$\text{الف)} g(n) = f(2n-1) \rightarrow g(n) = \{(1, 1) (3, 2) (\frac{1}{2}, \frac{1}{2}) (\frac{1}{4}, \frac{1}{4}) (\frac{1}{8}, \frac{1}{8})\}$$

(12)

$$\text{ب)} h(n) = f(1/n) = \{(1, 1) (2, -1) (3, 1) (-2, -1) (-3, 1)\}$$