

$$f(a) = (a+1)(a+1) = Va + V, f(-1) = Va - 2 \quad (1)$$

$$\Rightarrow V(Va + V) = Va - 2 \Rightarrow 10a = -11 \Rightarrow a = \frac{-11}{10} = \frac{-9}{10}$$

$$(x - \sqrt{x})(x + \sqrt{x}) = 1 \Rightarrow \text{indicated } x = \frac{1}{x}$$

$$f\left(\frac{1}{x}\right) = \sqrt{\frac{1}{x}} + \frac{1}{\sqrt{\frac{1}{x}}} + x = \frac{1}{\sqrt{x}} + \sqrt{x} + x = f(x) \Rightarrow f(x) = f\left(\frac{1}{x}\right)$$

$$\Rightarrow f(x + \sqrt{x}) = f\left(\frac{1}{x - \sqrt{x}}\right) = f(x - \sqrt{x})$$

$$\Rightarrow f(x - \sqrt{x}) + f(x + \sqrt{x}) = 2f(x - \sqrt{x})$$

$$Va \Rightarrow f(x) = \frac{1}{\sqrt{x}} + \sqrt{x} + x = A + x$$

$$A = x + \frac{1}{x} + x = (x - \sqrt{x}) + (x + \sqrt{x}) + x = 2 + x = 2 \Rightarrow A = 2$$

$$f(x - \sqrt{x}) = \sqrt{4} + 2 \Rightarrow f(x - \sqrt{x}) + f(x + \sqrt{x}) = 2(\sqrt{4} + 2) = 2\sqrt{4} + 4$$

$$\left. \begin{aligned} 2f(x) - 2f(-x) &= 2x^2 - x \\ 2f(x) - 2f(-x) &= 2x^2 + x \end{aligned} \right\} \Rightarrow \begin{aligned} 4f(-x) + 2f(x) &= 1x^2 - 2x \\ 4f(-x) - 2f(x) &= 1x^2 + 2x \\ \hline -2f(x) &= 2x \Rightarrow x \end{aligned}$$

$$\Rightarrow f(x) = -x^2 - \frac{1}{2}x$$

$$x = 0 \Rightarrow 2f(0) - 2f(0)f(1) = 2(0)^2 - m(0) + 2m - 1 \quad (2)$$

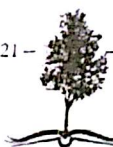
$$\Rightarrow 2f(0) - 0 = 2m - 1 \Rightarrow f(0) = \frac{2m - 1}{2} \Rightarrow m = \frac{2f(0) + 1}{2}$$

$$x = -1 \Rightarrow (0)f(-1) - 2f(-1)f(0) = 14 + 2m + 2m - 1$$

$$\Rightarrow 4f(0) = 14 + 4m$$

$$\Rightarrow 4f(0) = 14 + 2\left(\frac{2f(0) + 1}{2}\right) \Rightarrow 11f(0) = 12 + 1f(0) + 1$$

$$\Rightarrow 11f(0) = 13 \Rightarrow f(0) = \frac{13}{11}$$



All correct

$$\text{Def/ } f(n) + f\left(\frac{1}{n}\right) = \frac{n^2 - 1}{n} \Rightarrow f(-1) = ? \quad (a)$$

$$= (an + b) + \left(\frac{a}{n} + b\right) = \frac{an + \frac{a}{n} + 2b}{1}$$

$$\Rightarrow an + \frac{a}{n} + 2b = \frac{n^2 - 1}{n} = n - \frac{1}{n}$$

$$\Rightarrow \frac{n^2 - 1}{n} = n - \frac{1}{n}$$

$$a = 1 \Rightarrow b = -1$$

$$\Rightarrow f(-1) = 1(-1) - 1 = -2$$

(4)

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

$$1-n \geq 0 \Rightarrow n \leq 1 \Rightarrow D_f = (-\infty, 1]$$

$$g(n) = \sqrt{(1-n)^3}$$

$$(1-n) \geq 0 \Rightarrow 1-n \geq 0 \Rightarrow n \leq 1, D_g = (-\infty, 1]$$

$$f(n) = g(n) \Rightarrow \sqrt{1-n} = \sqrt{(1-n)^3}$$

$$\sqrt{1-n} = \sqrt{(1-n)^3}$$

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

$$\rightarrow D_f = [0, +\infty)$$

(v)

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

$$n^3 \geq 0 \rightarrow [0, +\infty)$$

$$n\sqrt{n} = n^{\frac{3}{2}} \Rightarrow \sqrt{n^3} = n^{\frac{3}{2}}$$

Simple

$$f(n) = [\sqrt{n} - \sqrt{n}]$$

$$n \geq 0$$

$$n = 1 \Rightarrow$$

$$n = 1 \Rightarrow$$

(A)

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

$$n - |n| \geq 0 \Rightarrow n \geq |n| \Rightarrow n \geq 0$$

$$n = |n|$$

$$n = |n|$$

$$\Rightarrow \text{Simple}$$

$$f = \{(1, 2), (2, 3), (3, 1), (-1, -1)\}$$

$$g = \{(-1, 1), (1, 1), (2, 3), (3, 1), (-2, 2), (\sqrt{2}, 1)\}$$

$$a) \left(\frac{f+g}{f-g} \right) (1) = \frac{3}{1} = 3$$

$$(f+g)(1) = f(1) + g(1) = 2 + 1 = 3, (f-g)(1) = f(1) - g(1) = 2 - 1 = 1$$

$$b) \left(\frac{f+g}{f-g} \right) (2) = 0$$

$$(f+g)(2) = f(2) + g(2) = 3 + 3 = 6, (f-g)(2) = 3 - 3 = 0 \Rightarrow 0$$

$$c) f(0)g(-1) = 0 \cdot 1 = 0$$

$$f(n) = \{(2, 1), (-1, 2), (0, 3), (-2, 2), (3, -1)\}$$

$$a) g(n) = f(n-1)$$

$$n = -2 \Rightarrow a = -\frac{1}{2} \left(-\frac{1}{2}, 2 \right) \leftarrow n = 2 \Rightarrow a = 1 \Rightarrow (1, 1), a = -1 \Rightarrow n = 0 \Rightarrow (0, 3), a = 0 \Rightarrow n = \frac{1}{2} \Rightarrow \left(\frac{1}{2}, 3 \right)$$

$$\Rightarrow g = \{(1, 1), (0, 3), \left(\frac{1}{2}, 3 \right), \left(-\frac{1}{2}, 2 \right), \left(\frac{3}{2}, -1 \right)\}$$

$$b) h(n) = f(|n|)$$

$$f(1) = 2, f(2) = 3, f(3) = 1$$

$$h(1) \rightarrow f(1) = 2, h(-1) \rightarrow f(1) = 2, h(2) \rightarrow f(2) = 3, h(-2) \rightarrow f(2) = 3, h(3) \rightarrow f(3) = 1, h(-3) \rightarrow f(3) = 1$$

$$\Rightarrow h(n) = \{(-3, 1), (-2, 3), (-1, 2), (1, 2), (2, 3), (3, 1)\}$$

منه باب 11

