

$$\begin{aligned} YF(a) &= F(-1) + a \\ Y(a+1)(v) &= Ya - Y + a \\ \text{با } v=a+1 \\ 1(a+1) &= Ya - Y \\ 1+a &= -1 \\ a &= -1 \end{aligned}$$

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$$\begin{aligned} (Y-\sqrt{Y})(Y+\sqrt{Y}) &= Y-Y=1 \rightarrow \sqrt{Y-\sqrt{Y}} \times \sqrt{Y+\sqrt{Y}} = 1 \rightarrow \sqrt{Y-\sqrt{Y}} = \frac{1}{\sqrt{Y+\sqrt{Y}}} \\ F(Y-\sqrt{Y}) + F(Y+\sqrt{Y}) &= \sqrt{Y-\sqrt{Y}} + \sqrt{Y+\sqrt{Y}} + Y + \sqrt{Y+\sqrt{Y}} + \sqrt{Y-\sqrt{Y}} = Y(\sqrt{Y+\sqrt{Y}} + \sqrt{Y-\sqrt{Y}}) + \varepsilon \\ A' &= (Y-\sqrt{Y}) + (Y+\sqrt{Y}) + Y\sqrt{(Y-\sqrt{Y})(Y+\sqrt{Y})} = 2Y + Y = 3Y \\ Y-\sqrt{Y} + Y+\sqrt{Y} &= 4 \\ A &= \sqrt{4} \end{aligned}$$

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$$\begin{aligned} YF(x) - YF(-x) &= Yx^2 - x \\ YF(-x) - YF(x) &= -Yx^2 + x \\ \Rightarrow \begin{cases} YF(x) - YF(-x) = Yx^2 - x \\ YF(-x) - YF(x) = -Yx^2 + x \end{cases} \\ -2YF(x) &= -Yx^2 + x \\ F(x) &= \frac{Y}{2}x^2 - \frac{1}{2}x \end{aligned}$$

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$$\begin{aligned} x=0 &\rightarrow YF(0) = Ym-1 \rightarrow F(0) = \frac{Y}{Y}m - \frac{1}{Y} \\ x=-1 &\rightarrow YF(0) = 1Y + Ym + Ym-1 \rightarrow YF(0) = 1Y + 2Ym \rightarrow F(0) = \frac{1}{Y} + \frac{2}{Y}m \\ \frac{Y}{Y}m - \frac{1}{Y} &= \frac{1}{Y} + \frac{2}{Y}m \rightarrow \frac{Y}{Y}m - \frac{1}{Y} = \frac{1}{Y} + \frac{2}{Y}m \rightarrow \frac{Y}{Y}m = \frac{2}{Y} \\ F(0) &= \frac{Y}{Y} \times \frac{2}{Y} - \frac{1}{Y} = \frac{2Y}{Y} - \frac{1}{Y} = \frac{2Y-1}{Y} = \frac{24-1}{4} = \frac{23}{4} \\ F(x) &= \frac{Ym-1}{Y} = \frac{Y(\frac{2}{Y})-1}{Y} = \frac{2Y-1}{Y} = \frac{24-1}{4} = \frac{23}{4} \end{aligned}$$

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$$F(-1) + F(-1) = \frac{Y(-1)^2 + 1Y + Y}{-1} \rightarrow YF(-1) = -1Y \rightarrow F(-1) = -1$$

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$F(x) = (x-1)\sqrt{1-x}$ $\{x-1 \neq 0 \rightarrow x \neq 1\}$ $IL: \sqrt{1-x} \rightarrow 1-x \geq 0 \rightarrow 1 \geq x$ - 9
 $D_F: I \cap IL = (1, 1) \cup (-\infty, 1]$
 $g(x) = -\sqrt{1-x}$ $D_g: 1-x \geq 0 \rightarrow 1 \geq x \rightarrow (-\infty, 1]$
 $\rightarrow x \leq 1$ برابر نیست

$F(x) = x\sqrt{x}$ $I: x \in \mathbb{R}$ $IL: \sqrt{x} \rightarrow x \geq 0$ - 10
 $D_F: I \cap IL = [0, +\infty)$
 $g(x) = \sqrt{x^3}$ $\rightarrow x^3 \geq 0 \rightarrow x \geq 0$ $D_g: [0, +\infty)$ برابر هستند

$F(x) = [\sqrt{x} - \sqrt{x}]$ $x \in \mathbb{Z} \rightarrow$ - 1
 $g(x) = \sqrt{x-|x|}$ $D_g: x-|x| \geq 0 \rightarrow x \geq |x| \rightarrow x \geq 0$

الف) $\left(\frac{f+g}{f-g}\right)(1) = \frac{\{(1, 3), (2, 4), (3, 4), (0, 2)\}}{\{(1, 1), (2, 0), (3, -4), (0, -2)\}} = \{(1, 3), (3, -\frac{4}{-4}), (0, -1)\}$ - 9
 ب) $\left(\frac{f+g}{f-g}\right)(1) = \frac{\{(1, 3), (2, 4), (3, 4), (0, 2)\}}{\{(1, 1), (2, 0), (3, -4), (0, -2)\}} = \{(1, 3), (3, -\frac{4}{-4}), (0, -1)\}$ - 9
 $2) F(0)g(-1) = 0 \times 1 = 0$ - 10

الف) $g(x) = F(x_{x-1}) \rightarrow x_{x-1} = r$ - 10
 $g(x) = \{(1, 1), (0, 2), (\frac{1}{x}, \frac{1}{x}), (-\frac{1}{x}, \frac{1}{x}), (\frac{x}{x}, -1)\}$
 ب) $h(x) = F(|x|)$ - 10
 $h(x) = \{(1, 1), (-1, 1), (0, 2), (\frac{x}{x}, -1), (-\frac{x}{x}, -1)\}$

$$x=0 \quad 2f(\cdot) = 3m-1 \rightarrow f(\cdot) = \frac{3m-1}{2}$$

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$$x=-2 \quad 4f(\cdot) = 4(-2)^2 + 2m + 3m-1 \rightarrow f(\cdot) = \frac{6m+15}{4}$$

$$\frac{6m+15}{4} = \frac{3m-1}{2} \rightarrow 1.5m + 3.75 = 1.5m - 0.5 \rightarrow 1.5m = 3.25 \rightarrow m = \frac{13}{6} \notin \mathbb{Z}$$

$$f(\cdot) = \frac{3m-1}{2} \notin \frac{15+6m}{4} \leadsto f(\cdot) = \frac{3(x, a)-1}{2} = \boxed{4, 15 \notin \frac{15}{2}}$$

$$f(n) = (n-1)\sqrt{1-n} \rightarrow Df = 1-n \geq 0 \rightarrow n \leq 1 \rightarrow Df = (-\infty, 1]$$

$$g(n) = -\sqrt{(1-n)^3} \rightarrow Dg = (1-n)^3 \geq 0 \rightarrow n \leq 1 \rightarrow Dg = (-\infty, 1]$$

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$Df \subseteq Dg$ ✓ (دامنه ها) شرط اول برقرار است!

$$g(n) = -\sqrt{(1-n)^3} = -\sqrt{(1-n)^2(1-n)} = -|1-n|\sqrt{1-n} \xrightarrow{n \leq 1} -(1-n)\sqrt{1-n} = (n-1)\sqrt{1-n}$$

$$f(n) = g(n) \quad \checkmark \text{ (ضابطه ها) شرط دوم برقرار است!} \rightarrow \boxed{f(n) = g(n)}$$

$$\text{الف) } \frac{f(1)+g(1)}{f(1)-g(1)} = \frac{2+1}{2-1} = 3$$

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$$\text{ب) } \frac{f(2)+g(2)}{f(2)-g(2)} = \frac{3+3}{3-3} = \frac{6}{0} \text{ تعریف نشده!}$$

$$\text{پ) } f(\cdot) \times g(-1) = 0 \times 1 = 0$$