

۲. آزمون

آزمون شفاهی از: یازدهم

$$f(n) + g(n) = \sqrt{n+1}\sqrt{n-1} + \sqrt{n}\sqrt{n-4}$$

$$\Rightarrow 2n + 2\sqrt{n^2 - 12(n-4)} = 2n + 2\sqrt{n^2 - 12n + 48} = 2n + 2(n-8) = 2n - 16$$

$$f(n-4) = (a+b\sqrt{n-4}+c)^2 \Rightarrow a+b\sqrt{n-4}+c = \sqrt{n-4} \Rightarrow \begin{cases} a=0 \\ b=1 \\ c=-4 \end{cases} \Rightarrow \frac{2}{-4} = -\frac{1}{2}$$

$$f(n) = \frac{n+2}{(n-1)(n-3)} \quad (1, \frac{4}{3}), (2, \frac{5}{2}), (3, \frac{6}{1}), (4, \frac{7}{0})$$

$$g = \left\{ (1, -\frac{1}{2}), (-1, -\frac{1}{2}) \right\} \quad \text{الف) } \left\{ (\frac{1}{2}, 1), (\frac{2}{3}, -1), (2, \frac{2}{3}), (-\frac{1}{2}, 9) \right\}$$

$$\text{ب) } \left\{ (1, 1), (\sqrt{3}, -1), (2, 2), (\sqrt{2}, 2), (2, 2), (-2, 2) \right\}$$

$$h = \left\{ (2, \omega), (2, \delta), (-2, \epsilon) \right\}$$

$$[n] + [-n] \xrightarrow{\text{تغییر نشد}} -1 \Rightarrow g(n) = 0 \Rightarrow n \in \mathbb{Z}$$

$$\sqrt{2n} - n \geq 0 \Rightarrow n - \sqrt{2n} \leq 0 \Rightarrow t = \sqrt{2n} \Rightarrow t^2 - t \leq 0 \Rightarrow \frac{0}{+1} - \frac{0}{-1} + \frac{0}{+1} \Rightarrow 0 \leq t \leq 1 \Rightarrow 0 \leq \sqrt{2n} \leq 1 \Rightarrow 0 \leq n \leq \frac{1}{2} \Rightarrow n = 0, 1 \Rightarrow \frac{D_f}{g+1} = \{0, 1, 3\}$$

$$f(n) = \sqrt{-(n-1)(n-4)}$$

$$h_{f(n)} = \left\{ (1, 0), (2, \frac{\sqrt{2}}{2}), (4, 0) \right\}$$

$$\text{الف) } y = (x-1)^3 + 1 \Rightarrow y-1 = (x-1)^3 \Rightarrow x-1 = \sqrt[3]{y-1} \Rightarrow x = 1 + \sqrt[3]{y-1} \Rightarrow \mathbb{R}_f = \mathbb{R}$$

$$\text{ب) } y/(n^2-2n) = 1 \Rightarrow n^2-2n = \frac{1}{y} \Rightarrow n = 1 \pm \sqrt{1 + \frac{1}{y}} \Rightarrow 1 + \frac{1}{y} \geq 0 \Rightarrow \frac{y+1}{y} \geq 0 \Rightarrow \frac{-1}{+1} - \frac{0}{-1} + \frac{0}{+1} \Rightarrow \mathbb{R}_f = \mathbb{R} - (-1, 0]$$

$$\text{الف) } \left| \frac{2}{y} \right| \xrightarrow{y} \mathbb{R}_f = [4, +\infty) \quad \text{ب) } \left| \frac{2}{-y} \right| \xrightarrow{y} \mathbb{R}_f = [4, +\infty) \cup [0, +\infty)$$

$$\text{ب) } \left| \frac{3}{11} \right| \xrightarrow{y} \mathbb{R}_f = [-\infty, 12] \quad \text{د) } \sqrt{n^2 + \frac{1}{n^2}} \xrightarrow{y} [9, +\infty) \Rightarrow [0, 2]$$

$$\text{الف) } \rightarrow \mathbb{R} - \{2\}$$

$$\text{ب) } \rightarrow \mathbb{R} - \{2\}$$

$$\begin{aligned} \text{الف) } &\rightarrow \mathbb{R} \\ \text{ب) } &\rightarrow \mathbb{R} \\ \text{د) } &\rightarrow \sqrt{\mathbb{R}} \rightarrow [0, +\infty) \\ \text{د) } &\rightarrow \mathbb{R} \rightarrow [0, +\infty) \end{aligned}$$