

نام و نام خانوادگی شماره کلاس پاسخنامه تشریحی تکلیف شماره ۲۰

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$$f(n) = \sqrt{n+2} \sqrt{n-2} = \sqrt{n^2 - 4} = \sqrt{(n-2)(n+2)} = \sqrt{(n-2)^2 + 4} = \sqrt{n^2 - 4 + 4} = \sqrt{n^2} = |n| = \sqrt{n-2} + 2$$

$$g(n) = \sqrt{n-2} \sqrt{n+2} = \sqrt{n^2 - 4} = \sqrt{(n+2)(n-2)} = \sqrt{(n+2)^2 - 4} = \sqrt{n^2 + 4 - 4} = \sqrt{n^2} = |n| = \sqrt{n-2} - 2$$

$$g(n) + f(n) = \sqrt{n-2} + 2 + \sqrt{n-2} - 2 = 2\sqrt{n-2} = a + b\sqrt{n+c} \rightarrow a=0, b=2, c=-2$$

$$\rightarrow \frac{a+b}{c} = \frac{2}{-2} = -1$$



$$f(n) = \frac{n+2}{(n-1)(n-3)} \rightarrow f(2) = \frac{4}{(-1)(-1)} = 4$$

$$f(1) = \frac{3}{0} \rightarrow \text{ت.ج}$$

$$f(3) = \frac{5}{0} \rightarrow \text{ت.ج}$$

$$f(4) = \frac{6}{(-3)(1)} = -\frac{2}{3}$$

$$\begin{cases} \frac{g}{f}(2) = -\frac{1}{2} \\ \frac{g}{f}(4) = 4 \end{cases}$$

$$\rightarrow \left\{ \left(2, -\frac{1}{2}\right), \left(4, 4\right) \right\}$$

$$f(n) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 4\right) \right\} \rightarrow \text{مقلوب اول}$$

$$f(n^2) = \rightarrow n^2 = 1 \rightarrow n = \pm 1, n^2 = 4 \rightarrow n = \pm 2, n^2 = 9 \rightarrow n = \pm 3, n^2 = 16 \rightarrow n = \pm 4 \rightarrow \left\{ (1, 2), (-1, 2), (3, -1), (-3, -1), (2, 2), (-2, 2) \right\}$$

$$g(n) = \left\{ (-2, 4), (2, 4), (4, 9), (-4, 9) \right\}$$

$$\frac{gf}{g} = \left\{ (1, -4), (3, -\frac{2}{3}), (-1, \frac{4}{3}) \right\} = \left\{ (1, -4), (3, -1) \right\}$$

$$h(n) = 2f(n) + g(n) \rightarrow g, f \text{ ششگوشه } n = -2, 2, 4$$

$$\Rightarrow \left\{ (-2, 4), (2, 4), (4, 9) \right\}$$

$$\left(\frac{f}{g}\right)(n) = \frac{\sqrt{3n-n}}{n-2} \rightarrow \sqrt{3n-n} \geq 0 \rightarrow 3n \geq n^2 \rightarrow n(n-3) \leq 0 \rightarrow \frac{0}{3} \rightarrow [0, 3]$$

$$[n] = [-n] + 1 \rightarrow 3n \geq 0 \rightarrow n \geq 0, n \neq 2$$

$$\text{if } n \in \mathbb{Z} \rightarrow [n] + [-n] = -1 \rightarrow \text{مخرج مشترک ۱}$$

$$\text{if } n \in \mathbb{Z} \rightarrow [n] + [-n] = 0 \rightarrow n \in \mathbb{Z}$$

$$n \rightarrow D = \{0, 1, 3\}$$

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

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

$$h(n) = \left\{ (1, 0), (2, 0), (3, \sqrt{3}) \right\}$$

⊂

$$\text{a)} y = x^2 - 4x^2 + 4x \rightarrow y = x^2 - 4x^2 + 4x + 1 - 1 \rightarrow (x-1)^2 + 1 \rightarrow x = \sqrt{y-1} + 1 \rightarrow R_f = \mathbb{R}$$

$$\rightarrow y = x^2 - 4x^2 + 4x \rightarrow y = x^2 - 4x^2 + 4x + 1 - 1 \rightarrow \Delta = 4y^2 + 4y \rightarrow x = \frac{y \pm \sqrt{4y^2 + 4y}}{2y} = \frac{y \pm \sqrt{4y(y+1)}}{2y} \geq 0$$

$$\rightarrow \frac{-1 \pm \sqrt{1-4}}{2} \rightarrow R_f = [-\infty, -1] \cup (0, +\infty)$$

$$\text{a)} y = x^2 - 4x^2 + 4x \rightarrow \min |y| \rightarrow R_f = [4, +\infty)$$

$$\rightarrow y = -x^2 + 4x + 4 \rightarrow \max |y| \rightarrow R_f = (-\infty, 12]$$

$$\text{b)} y = \sqrt{x^2 - 4x + 4} \rightarrow \min |y| \rightarrow R_f = \sqrt{[-1, +\infty)} = [0, +\infty)$$

$$\text{c)} y = \sqrt{4x - x^2} \rightarrow \max |y| \rightarrow R_f = \sqrt{[-\infty, 4]} = [0, 2]$$

$$\text{a)} y = x^2 - 4x^2 + 4x + 1 \rightarrow \text{بالتقريب قول عبارة فزر} \rightarrow R_f = \mathbb{R}$$

$$\rightarrow y = x^2 - 4x^2 + 4x + 1 \rightarrow \text{بالتقريب قول عبارة فزر} \rightarrow R_f = \mathbb{R}$$

$$\text{b)} y = \sqrt{x^2 - 4x + 4} \rightarrow \text{بالتقريب قول عبارة فزر} \rightarrow R_f = \sqrt{\mathbb{R}} = [0, +\infty)$$

$$\text{c)} y = \left(\frac{4x^2 + 4x + 1}{x^2} \right)^{\frac{1}{2}} \rightarrow R_f = [0, +\infty)$$

$$\text{a)} y = \frac{4x+1}{x-2} \rightarrow \mathbb{R} - \left\{ \frac{1}{2} \right\} \rightarrow R_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$$

$$\rightarrow y = \frac{4x+1}{x-2} \rightarrow \mathbb{R} - \left\{ \frac{1}{2} \right\} \rightarrow R_f = \mathbb{R} - \left\{ \frac{1}{2} \right\}$$