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نام و نام خانوادگی: پاشنامه تشریحی تکلیف شماره ... کلاس	$t = \sqrt{x-4}$ $x = t^2 + 4$ $f(t) = \sqrt{t^2 + 4} + t = \sqrt{(t+2)^2} + t + 2$ $g(t) = \sqrt{t^2 + 4} - t + 2 = \sqrt{(t-2)^2} + t - 2$ $f(x) + g(x) = 2\sqrt{x-4}$ $a+b\sqrt{a+c}$ $a=0$ $b=2$ $c=4$ $\frac{a+b}{c}, \frac{0+2}{-4} = -\frac{1}{2}$
$x^2 - 4x + 3 = (x-1)(x-3)$ $x \neq 1, 3$ $x=2$ $g(2)=1$ $f(2) = \frac{2+2}{2-4} = \frac{4}{-2} = -2$ $g(2)=1$ $g(2)=1$ $g(2)=1$ $g(2)=1$ $\frac{g}{f} = \left\{ \left(2 - \frac{1}{2}\right), (2, 4) \right\}$	$\frac{g}{f} = \left\{ \left(2 - \frac{1}{2}\right), (2, 4) \right\}$ $\frac{g(2)}{f(2)} = \frac{1}{-2} = -\frac{1}{2}$ $\frac{g}{f} = \left\{ \left(2 - \frac{1}{2}\right), (2, 4) \right\}$ $\frac{g(2)}{f(2)} = \frac{1}{-2} = -\frac{1}{2}$ $\frac{g}{f} = \left\{ \left(2 - \frac{1}{2}\right), (2, 4) \right\}$ $\frac{g(2)}{f(2)} = \frac{1}{-2} = -\frac{1}{2}$
$D_f \cap D_g = \{2, 3, -2\}$ $h(x) = 2f(x) + g(x)$ $h(-2) = 2f(-2) + g(-2)$ $= 2(0) + 4 = 4$	$D_f = [0, 3] - \{2\}$ $[x] + [-x] = 0$ $x \in \mathbb{Z}$ $D_f = [0, 3] - \{2\}$ $D_f = [0, 3] - \{2\}$

الف) $y = (n-1)^2 + 1 \rightarrow y-1 = (n-1)^2 \quad n = 1 + \sqrt{y-1} \quad y \in \mathbb{R}$ ب) $y = \frac{1}{n^2 - 2n} \rightarrow \frac{1}{y} = n^2 - 2n = (n-1)^2 - 1 \rightarrow (n-1)^2 = 1 + \frac{1}{y}$ $1 + \frac{1}{y} \geq 0 \rightarrow y \in (-\infty, -1] \cup (0, +\infty)$	6
$5n - n^2 - 4 \geq 0 \rightarrow 1 \leq n \leq 4 \quad n = 1, 2, 4$ $h(1) = 0, \quad h(2) = \frac{\sqrt{2}}{2}, \quad h(4) = 0 \quad h = \left\{ (1, 0), (2, \frac{\sqrt{2}}{2}), (4, 0) \right\}$	7 جانباً نوشتن
الف) $y = (n-2)^2 + 4 \geq 0 \rightarrow \text{بر } [4, +\infty)$ ب) $y = -(n-2)^2 + 12 \rightarrow \text{بر } (-\infty, 12]$ ج) $4n - n^2 \rightarrow \text{بر } [0, +\infty)$ $4n - n^2 \rightarrow \max \big _a \rightarrow R_f = [0, 4]$ د) $\sqrt{4n - n^2} = \frac{11}{\varepsilon} - (n - \frac{11}{\varepsilon})^2 \Rightarrow y_{\max} = \frac{1}{4} \rightarrow \text{بر } [\frac{1}{4}, 0]$ مدرست سوال استباه!	8
الف) $y = n^3 - 5n^2 + 2n + 1$ $\text{بر } \mathbb{R}$ ب) $y = n^4 - 4n^2 + 3n + 2$ $\text{بر } \mathbb{R}$ ج) $\text{برای } n \geq 0 \rightarrow \text{بر } [0, +\infty)$ د) $y \geq 0 \rightarrow P(0) = 1, P(-1) = -5 \rightarrow \text{بر } [-5, +\infty)$	9
برای جوابی که می‌خواهیم برابر $\{ \frac{5}{2} \}$ است $R_f = 12 - \{ \frac{5}{2} \}$ الف) $y = \frac{3n+1}{n-2} \rightarrow R_f = 12 - \{ 5 \}$ ب) $y = \frac{2n+1}{n+1} \rightarrow R_f = 12 - \{ 5 \}$	10

$$Df = \mathbb{R} - \{1, 3\} \quad (x^2 - 4x + 3 \neq 0 \rightarrow x \neq 1, 3) \quad (2)$$

$$Df \cap Dg = \{2, 0\} \rightarrow \frac{g}{f} = \left\{ \left(2, -\frac{1}{2}\right), (0, 4) \right\}$$

$$f(x) = \left\{ \left(\frac{1}{x}, 2\right), \left(\frac{x}{2}, -1\right), (2, 2), \left(-\frac{1}{x}, 4\right) \right\} \quad x \text{ های } f \text{ باید مقیم بر ۲ نبندند!} \quad (3)$$

$$f(x^2) = \left\{ (1, 2), (-1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2) \right\} \quad \text{هر کدام از } x \text{ های } f \text{ را برابر } x^2 \text{ قرار دهیم!}$$

$$2g^r(x) + 1 = \left\{ (-2, 19), (1, 3), (3, 9), (-1, 1) \right\} \quad \text{این عمل روی } y \text{ های } g \text{ اعمال می شود:}$$

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

$$\text{الف - ۱)} \quad y = x^2 - 2x + 1 \rightarrow \min \begin{cases} x = \frac{2}{2} = 1 \\ y = 1 - 2 + 1 = 0 \end{cases} \rightarrow Rf = [0, +\infty)$$

$$\text{ب - ۱)} \quad y = -x^2 + 4x + 3 \rightarrow \max \begin{cases} x = \frac{-4}{-2} = 2 \\ y = -9 + 16 + 3 = 10 \end{cases} \rightarrow Rf = (-\infty, 10]$$

$$\text{ج - ۱)} \quad y = x^2 - 2x - 3 \rightarrow \min \begin{cases} x = \frac{2}{2} = 1 \\ y = 1 - 2 - 3 = -4 \end{cases} \rightarrow Rf = \sqrt{[-4, +\infty)} = [-4, +\infty)$$

$$\text{د - ۱)} \quad y = 4x - x^2 \rightarrow \max \begin{cases} x = \frac{-4}{-2} = 2 \\ y = 16 - 4 = 12 \end{cases} \rightarrow Rf = \sqrt{(-\infty, 12]} = (-\infty, 12]$$