

نام و نام خانوادگی: پاشنامه تشریحی تکلیف شماره ... کلاس	۱	۲	۳	۴	۵
	$t = \sqrt{x-4} \quad x = t^2 + 4 \quad f(t) = \sqrt{t^2 + 4 + 4} = \sqrt{(t+2)^2} = t+2$ $g(t) = \sqrt{t^2 + 4 - 4} = \sqrt{(t-2)^2} = t-2$ $f(x) + g(x) = 2\sqrt{x-4} \quad a+b\sqrt{a+c} \quad a=0 \quad b=2 \quad c=4$ $\frac{a+b}{c} = \frac{0+2}{-4} = -\frac{1}{2} \leftarrow \text{میلاد}$	$x^2 - 4x + 3 = (x-1)(x-3) \quad x \neq 1, 3$ $x=2, \quad g(2)=1, \quad f(2)=\frac{2+3}{2-1} = \frac{5}{1} = 5 \quad g(2)=5, \quad f(2)=\frac{5+3}{5-1} = \frac{8}{4} = 2$ $\frac{g}{f} = \left\{ \left(2, \frac{1}{5}\right), (2, 4) \right\} \leftarrow \text{میلاد}$	$\text{الف)} \quad 2x = 1, 3, 4, 5, 6 \quad x = \frac{1}{2}, 2, -\frac{1}{2} \quad f(2x) = \left\{ \left(\frac{1}{2}, 2\right), \left(\frac{3}{2}, -1\right), (2, 2), \left(-\frac{1}{2}, 4\right) \right\}$ $\text{ب)} \quad x^2 = 1, 3, 4 \quad x = \pm 1, \pm \sqrt{3}, \pm 2 \quad f(x^2) = \left\{ (1, 2), (-1, 2), (\sqrt{3}, -1), (-\sqrt{3}, -1), (2, 2), (-2, 2) \right\}$ $\text{ج)} \quad g^{-1} = \left\{ (2^2-2, 1), (3^2-2, 0), (4^2-2, -1) \right\} \quad x = 2 \rightarrow 2(-2) + 1 = -3$ $x = 3 \rightarrow 2(1) + 1 = 3$ $x = 4 \rightarrow 2(3) + 1 = 7$ $x = 5 \rightarrow 2(-1) + 1 = -1$ $\left\{ (3, -3), (-1, 3), (2, 7), (2, -1) \right\}$	$D_f \cap D_g = \{2, 3, -2\} \quad h(x) = 2f(x) + g(x)$ $= 2(1) + 3 = 5$ $h(-2) = 2f(-2) + g(-2)$ $= 2(0) + 4 = 4$ ↓	$D_f = [0, 3] - \{2\} \quad [x] + [-x] = 0 \quad x \in \mathbb{Z}$ ↑ $D_f = \{0, 1, 2, 3\}$ ↓ $D_f = \{0, 1, 2, 3\}$

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 ↑ ↓ جایگاه نوشتن
$2n - n^2 - 4 \geq 0 \rightarrow 1 \leq n \leq 4 \quad n = 1, 2, 4$ $h(1) = 0, \quad h(2) = \frac{\sqrt{2}}{2}, \quad h(4) = 0 \quad h = \left\{ (1, 0), (2, \frac{\sqrt{2}}{2}), (4, 0) \right\}$	7
الف) $y = (n-2)^2 + 4 \geq 0 \rightarrow \text{برد} = [4, +\infty)$ ب) $y = -(n-2)^2 + 12 \rightarrow \text{برد} = [12, +\infty)$ ج) $y = \frac{1}{n^2} \rightarrow \text{برد} = [0, +\infty)$ د) $9n - n^2 = \frac{11}{\epsilon} - \left(n - \frac{11}{2\epsilon} \right)^2 \rightarrow y_{\max} = \frac{1}{\epsilon} \rightarrow \text{برد} = \left[\frac{1}{\epsilon}, 0 \right]$	8
الف) $y = n^3 - 5n^2 + 2n + 1 \quad \text{برد} = \mathbb{R}$ ب) $y = n^4 - 4n^2 + 3n + 2 \quad \text{برد} = \mathbb{R}$ ج) $y = n^2 - 2n + 1 \rightarrow \text{برد} = [0, +\infty)$ د) $y \geq 0 \rightarrow P(0) = 1, \quad P(-1) = -5 \rightarrow \text{برد} = [0, +\infty)$	9
	10