

نام و نام خانوادگی: پاسخنامه تشریحی تکلیف شماره ۹ کلاس: A	
$h(x) = \begin{cases} \cot \frac{\pi x}{4}, & x \leq 1 \\ \sqrt{x^2 + 1}, & x > 1 \end{cases}$ $h\left(\frac{1}{\sqrt{2}}\right) \sim \frac{1}{\sqrt{2}} < 1 \rightarrow \cot \frac{1 \times \frac{1}{\sqrt{2}}}{4} = \cot \frac{1}{4\sqrt{2}} = \sqrt{3}$ $\Rightarrow h\left(\frac{1}{\sqrt{2}}\right) \sim \sqrt{2} > 1 \sim \sqrt{\left(\frac{1}{\sqrt{2}}\right)^2 + 1} = \sqrt{2}$ $\sqrt{2} \approx 1.4$	۱
الف) $h\left(\frac{\pi}{4}\right) \sim g\left(\frac{\pi}{4}\right) = 2\left(\frac{1}{2}\right)^2 = \frac{1}{2} \sim h\left(\frac{1}{2}\right) = \sqrt{\frac{1 \times 1}{4} - 1} = \frac{\sqrt{3}}{2}$ ب) $h(\sqrt{2}) \sim g(\sqrt{2}) = \frac{\sqrt{2}}{1 - \sqrt{2}} \xrightarrow{\text{ضرب در } -1 - \sqrt{2}} -(2 + \sqrt{2}) \sim h(-2 - \sqrt{2}) = [-2 - \sqrt{2}]$ $= -4$	۲
$g\left(h\left(\frac{\pi}{4}\right)\right) \sim h\left(\frac{\pi}{4}\right) = \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2} \sim g\left(\frac{\sqrt{2}}{2}\right) = \frac{\sqrt{2}}{2} \left(\sqrt{1 - \frac{2}{4}}\right)$ $= \frac{\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} = \frac{1}{2}$	۳
الف) $h \circ g(x) = \{(4, 5), (5, 6), (6, 1), (1, 2)\}$ ب) $g \circ h(x) = \emptyset$ ج) $h \circ h(x) = \emptyset$ د) $g \circ g(x) = \{(1, 1), (2, 4), (4, 1)\}$	۴
$h = \{(2, 1), (3, 2), (4, 0), (1, 3)\} \rightarrow (a, b) = ? \rightarrow (4, 0)$ $g = \{(1, 2), (2, 1), (3, 4), (4, 1)\}$ $h \circ g = \{(1, 1), (2, 3), (3, 4), (4, 1)\} \rightarrow (x, y) \in h \circ g \rightarrow a = 4$ $g \circ h \rightarrow 2 \Rightarrow 1 \Rightarrow 2$ $3 \Rightarrow 2 \Rightarrow 1$ $4 \Rightarrow 0 \Rightarrow 2$ و از آنجا که نتایج مجبوراً ۱ است $(4, 1) \in g \circ h \rightarrow b = 5$	۵

$$h(x) = ax + b \rightarrow h(x) = ax + b \rightarrow a(ax + b) + b = a^2x + ab + b = \varepsilon x + \varepsilon$$

$$a = \pm \sqrt{\varepsilon - \varepsilon}$$

$$g(x) = x^2 - 1$$

$$a = \varepsilon \rightarrow \varepsilon x + \varepsilon = \varepsilon x + \varepsilon \rightarrow b = 1 \rightarrow x^2 + 1$$

$$a = -\varepsilon \rightarrow \varepsilon x - \varepsilon + b = \varepsilon x + \varepsilon \rightarrow -b = \varepsilon \rightarrow b = -\varepsilon \rightarrow x^2 - \varepsilon$$

$$g(h(-1)) = x^2 - 1 \rightarrow g(x^2 + 1) = x^2 - 1 \rightarrow g(-1) = -\varepsilon \quad \left| \quad g(h(x)) = -\varepsilon \right.$$

$$\rightarrow g(-x^2 - 1) = x^2 - 1$$

$$h(x) = \sqrt{x+1}, \quad g(x) = \frac{1}{x^2 - \varepsilon}$$

$$g \circ h \sim \frac{1}{x+1 - \sqrt{x+1}} \rightarrow x < \dots \quad \left. \begin{array}{l} \frac{1}{x} < 0 \\ \frac{1}{x} > 0 \end{array} \right\}$$

$$\rightarrow D_{g \circ h} = (0, \infty) - \{1\}$$

مخرج را از صفر جدا

$$h(x) = \sqrt{\frac{1-x}{1+x}} \rightarrow -1 \leq x \leq 1 \quad \left\{ \begin{array}{l} D_h \text{ و } D_g \sim [0, 1] \end{array} \right.$$

$$g(x) = \sqrt{\frac{x}{1+x}} \rightarrow x \geq 0$$

$$(h+g) \circ h = h+g(\sqrt{\frac{1-x}{1+x}}) \xrightarrow{\text{مخرج را از صفر جدا}} [0, 1]$$

$D \sim [-1, 1]$

$$h\left(\frac{r_{n+1}}{n-r}\right) = r_{n+1} \sim \frac{r_{n+1}}{n-r} = t \sim r_{n+1} = t_n - r\varepsilon$$

$$1 + r\varepsilon = n(t - \varepsilon)$$

$$h(t) = r_{t+1} \rightarrow h\left(\frac{r_{t+1}}{t-r}\right) = r\left(\frac{r_{t+1}}{t-r}\right) + 0 \xrightarrow{t \rightarrow r} \frac{1+r\varepsilon}{t-r}$$

$$\Rightarrow h\left(n + \frac{1}{n}\right) = n^2 + \frac{1}{n} = \underbrace{\left(n + \frac{1}{n}\right)}_t \left(\underbrace{n^2 - 1 + \frac{1}{n^2}}_{t^2 - \varepsilon}\right) \rightarrow h(t) = t(t^2 - \varepsilon)$$

$$\Rightarrow h(n) = n(n^2 - \varepsilon)$$

$$h(x) = n\sqrt{x} \rightarrow x > 0$$

$$g(1) \rightarrow 0$$

$$g(\sqrt{x}) \rightarrow \dots$$

$$g(h(x)) = 0 \rightarrow n\sqrt{x} = 1 \rightarrow x = 1 \quad \left\{ \begin{array}{l} x-1 = 1 \\ x-1 = -1 \end{array} \right.$$

$$n\sqrt{x} = \sqrt{x} \rightarrow x = 1$$