

نام و نام خانوادگی حسین حاجی حسینی پاسخنامه تشریحی تکلیف شماره ۹ کلاس B

$$\frac{\frac{\pi}{4}}{\frac{\pi}{4}} \times \frac{\pi}{4} = \frac{1}{4} \times \frac{\pi}{4} \Rightarrow \cot \frac{1}{4} \pi = \cot 22.5^\circ = \frac{\sqrt{2}}{1}$$

$$\sqrt{1 + \cot^2 22.5^\circ} = 2$$

۱

$$f(g(x)) = ? \quad 2 \cos^2\left(\frac{\pi}{4}\right) = \frac{1}{2} \quad f(x) = \sqrt{\frac{x-1}{x}} = \frac{\sqrt{x}}{2}$$

$$g(\sqrt{x}) = \frac{\sqrt{x} - 1}{1 - \sqrt{x}} \approx -2, 0 \quad f(x) \Rightarrow [-2, 0] \approx -2$$

۲

$$\frac{\pi}{4} \Rightarrow \sin \frac{\pi}{4} = \frac{\sqrt{2}}{2} \quad \sqrt{1 - \left(\frac{\sqrt{2}}{2}\right)^2} = \sqrt{1 - \frac{1}{2}} = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

۳

$$\left. \begin{array}{l} \text{الف)} \quad \begin{array}{l} 4 \rightarrow 2 \rightarrow 0 \\ 2 \rightarrow 4 \rightarrow 0 \\ 4 \rightarrow 8 \rightarrow 12 \\ 8 \rightarrow 1 \rightarrow 12 \end{array} \end{array} \right\} \Rightarrow \log(n) = \{(4, 0), (2, 0), (4, 12), (8, 12)\}$$

$$\text{ج.)} \quad \left. \begin{array}{l} 4 \rightarrow 0 \rightarrow 0 \\ 2 \rightarrow 0 \\ 8 \rightarrow 12 \\ 1 \rightarrow 12 \end{array} \right\} \Rightarrow Q = \log(n)$$

$$\text{ب.)} \quad \left. \begin{array}{l} 4 \rightarrow 0 \\ 2 \rightarrow 0 \\ 8 \rightarrow 12 \\ 1 \rightarrow 12 \end{array} \right\} \Rightarrow Q = \log(n)$$

$$\text{د.)} \quad \left. \begin{array}{l} 4 \rightarrow 2 \rightarrow 8 \\ 2 \rightarrow 4 \rightarrow 6 \\ 4 \rightarrow 8 \rightarrow 1 \\ 8 \rightarrow 1 \rightarrow 12 \end{array} \right\} \Rightarrow \log(n) = \{(4, 8), (2, 6), (4, 1), (8, 12)\}$$

۴

$$g(x) = x \rightarrow f(x) = 2 \Rightarrow \frac{1}{2} = \frac{1}{2} \Rightarrow a = 4 \quad (4, 0)$$

$$f(x) = x \rightarrow (g(x)) = 1 \Rightarrow b = 0$$

۵

$$f(x) = ax + b \Rightarrow f(f(x)) = a(ax + b) + b \Rightarrow a^2x + ab + b = \varepsilon x + c$$

$$\Rightarrow a = \pm 1 \quad \left. \begin{array}{l} a = 1 \rightarrow x + b \\ a = -1 \rightarrow -x - c \end{array} \right\} \Rightarrow f(-1) = -1$$

$$x + c = -1 \Rightarrow x = -1 - c \Rightarrow c - 1 - c = -1$$

$$D_f(x) = \mathbb{R} \quad \{x \in D_f : f(x) \in D_g\} \xrightarrow{\quad} \mathbb{R} - \{0, \varepsilon\}$$

$$D_g(x) = \mathbb{R} - \{0, \varepsilon\} \quad \downarrow \quad \downarrow$$

$$\mathbb{R} \quad \mathbb{R} - \{0, \varepsilon\}$$

$$1 - x^2 \geq 0 \Rightarrow 1 \geq x^2 \Rightarrow x \leq 1 \quad \Rightarrow D_f = [-1, 1]$$

$$x \geq 0 \Rightarrow D_g = [0, +\infty) \quad \{x \in D_f : f(x) \in D_{(f+g)}\} \Rightarrow D_{(f+g)} = [0, 1]$$

$$f(x) + g(x) = D_f \cap D_g = [0, 1] \quad [-1, 1] \quad [0, 1]$$

$$\text{ا) } \frac{x^{n+1}}{x-1} = t \Rightarrow tx - 1 = x^{n+1} \Rightarrow \frac{tx - (tx + \varepsilon) + \varepsilon}{tx - (tx + \varepsilon) + \varepsilon} = \varepsilon x > 0 \Rightarrow$$

$$tx - (tx + \varepsilon) + \varepsilon = \varepsilon x > 0 \Rightarrow tx - tx = \varepsilon t + 1$$

$$a(t-1) = \varepsilon t + 1 \Rightarrow n = \frac{\varepsilon t + 1}{t-1}$$

$$\text{ب) } t^c - ct$$

$$t^c = n + \frac{1}{n^c} + p\left(n + \frac{1}{n}\right) \Rightarrow f(t) = t^c - ct$$

$$f(n) = \left\{ \frac{1}{n} \right\} \quad f(n) = n\sqrt{n} \Rightarrow n\sqrt{\frac{1}{n}}$$

$$|x-1| = 1 = \text{اختلاف}$$