

$$f(n) \begin{cases} \cos \frac{\pi n}{\varepsilon}, n \leq 1 \\ \sqrt{n+1} \end{cases}$$

$$f\left(\frac{1}{\varepsilon}\right) = ?$$

$$f\left(f\left(\frac{1}{\varepsilon}\right)\right) = ?$$

$$f\left(\frac{1}{\varepsilon}\right) = \cos \frac{\pi}{\varepsilon} \Rightarrow \sqrt{\pi}$$

$$f(\sqrt{\pi}) = \sqrt{\sqrt{\pi}+1} = \sqrt{\varepsilon} \quad (2)$$

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

$$f\left(\frac{\pi}{\varepsilon}\right) = ? \quad g\left(\frac{\pi}{\varepsilon}\right) = \sqrt{\pi-1} \approx \sqrt{\pi} \times \frac{1}{\varepsilon} \approx \frac{1}{\varepsilon}$$

$$f\left(\frac{1}{n}\right) = f\left(\frac{1}{\varepsilon}\right) \rightarrow \sqrt{\frac{\varepsilon-1}{\varepsilon}} \Rightarrow \sqrt{\frac{\pi}{\varepsilon}}$$

$$f(n) = [n] \quad g(n) = \frac{n}{1-n}$$

$$f(\sqrt{\pi}) = ? \quad g(\sqrt{\pi}) = \frac{\sqrt{\pi}}{1-\sqrt{\pi}} \times \frac{1+\sqrt{\pi}}{1+\sqrt{\pi}} = \frac{\sqrt{\pi}+1}{-1} = -\sqrt{\pi}-1$$

$$f(-\sqrt{\pi}-1) = [-\sqrt{\pi}-1] = -\sqrt{\pi}-1 \quad (3)$$

$$f(n) = \sin n$$

$$f\left(\frac{\pi}{\varepsilon}\right) = \sin \frac{\pi}{\varepsilon} = \frac{\pi}{\varepsilon}$$

$$g(n) = n\sqrt{1-n^2}$$

$$g\left(\frac{\pi}{\varepsilon}\right) = \frac{\pi}{\varepsilon} \sqrt{1-\frac{\pi}{\varepsilon}} = \frac{1}{\varepsilon}$$

$$f(m) = \{(1,0), (1,1), (1,2), (1,3)\}$$

$$g(m) = \{(1,1), (2,1), (3,1), (4,1)\}$$

$$f \circ g(m) = \{(1,1), (2,1), (3,1), (4,1)\}$$

$$g \circ f(m) = \emptyset$$

$$g \circ f(m) = \{(1,1), (2,1), (3,1)\}$$

$$f = \{(1,1), (1,2), (1,3), (1,4)\}$$

$$g = \{(1,1), (1,2), (1,3), (1,4)\}$$

$$(1,1) \in f \rightarrow g(m) = 1 \rightarrow f(1) = 1 \rightarrow 1 \in f \rightarrow a \in f$$

$$(1,1) \in g \rightarrow f(m) = 1 \rightarrow g(1) = 1 \rightarrow 1 \in g \rightarrow b \in g$$

$$(a,b) \Rightarrow (1,1)$$

$$f \circ g, g \circ f, f(m) = 1 \rightarrow g(f(1)) = 1$$

$$f(f(m)) = 1$$

$$f(m) = 1 \rightarrow 1$$

$$g(m+1) = m+1 \rightarrow f(f(m)) = a(a+b) + b \rightarrow a^2 + ab + b^2$$

$$g \circ f(1) = 1 \rightarrow \begin{cases} a^2 = 1 \\ a = \pm 1 \end{cases} \begin{cases} a^2 \rightarrow b^2 \\ a = \pm 1 \rightarrow b = \pm 1 \end{cases}$$

$$g(m) = m+1 \rightarrow f(m) = m+1 \rightarrow f(m) = m+1$$

$$g(f(m)) = f(m) + 1 = m+1+1 = m+2 \rightarrow f(m+2) = m+2$$

$$f(m) = 1$$

$$f(m) = 1$$

$$\begin{aligned}
 1 \quad & f(m) = \sqrt{n+|m|} \\
 2 \quad & g(m) = \frac{1}{m^2 - \varepsilon m} \quad f(m) = \begin{cases} \sqrt{m} & m > 0 \\ 0 & m \leq 0 \end{cases} \quad D_g \subseteq \mathbb{R} - \{0, \varepsilon\} \\
 3 \quad & D_f = \mathbb{R} \quad \sqrt{n+|m|} \neq \{0, \varepsilon\} \\
 4 \quad & D_{g \circ f} = ? \quad \sqrt{n+|m|} \neq 0, n > 0 \\
 5 \quad & \sqrt{n+|m|} \neq \varepsilon \rightarrow m \neq 1 \quad D_{g \circ f} = (0, +\infty) - \{1\}
 \end{aligned}$$

$$\begin{aligned}
 7 \quad & f(m) = \sqrt{1-m^2} \quad \{m \in D_f, f(m) \in D_{f \circ g}\} \\
 8 \quad & g(m) = \sqrt{m} \\
 9 \quad & D(f \circ f \circ g \circ f) = ? \quad \sqrt{1-m^2} \in [0, 1] \rightarrow 0 \leq \sqrt{1-m^2} \leq 1 \\
 10 \quad & -1 \leq -m^2 \leq 0 \rightarrow 0 \leq m^2 \leq 1 \quad 0 \leq m^2 \leq 1 \rightarrow 0 \leq 1-m^2 \leq 1 \\
 11 \quad & D_f = \frac{-1+1}{-1+1} \quad D_f = [-1, 1] \quad -1 \leq m \leq 1 \quad (5) \\
 12 \quad & D_g = [0, +\infty) \quad D_{f \circ g} = D_f \cap D_g = [0, 1]
 \end{aligned}$$

$ \begin{aligned} 14 \quad & \text{a) } f\left(\frac{m+1}{n-r}\right) = \varepsilon(m+1) \\ 15 \quad & f(m) = ? \quad \frac{m+1}{n-r} = \varepsilon \\ 16 \quad & f(b) = \varepsilon\left(\frac{rb+1}{b-r}\right) + 0 \\ 17 \quad & \text{us } \frac{rb+1}{b-r} \rightarrow f(m) = \frac{10n-11}{n-r} \\ 18 \quad & \therefore \dots \end{aligned} $	$ \begin{aligned} 14 \quad & \text{b) } f\left(m + \frac{1}{n}\right) = m^2 + \frac{1}{n^2} \quad (9) \\ 15 \quad & f(m) = ? \quad \left(m + \frac{1}{n}\right) = b \\ 16 \quad & b^2 = m^2 + \frac{1}{n^2} + \frac{2m}{n} \\ 17 \quad & b^2 = m^2 + \frac{1}{n^2} + 2b \\ 18 \quad & m^2 + \frac{1}{n^2} = b^2 - 2b \\ 19 \quad & f(b) = b^2 - 2b \\ 20 \quad & f(m) = m^2 - 2m \end{aligned} $
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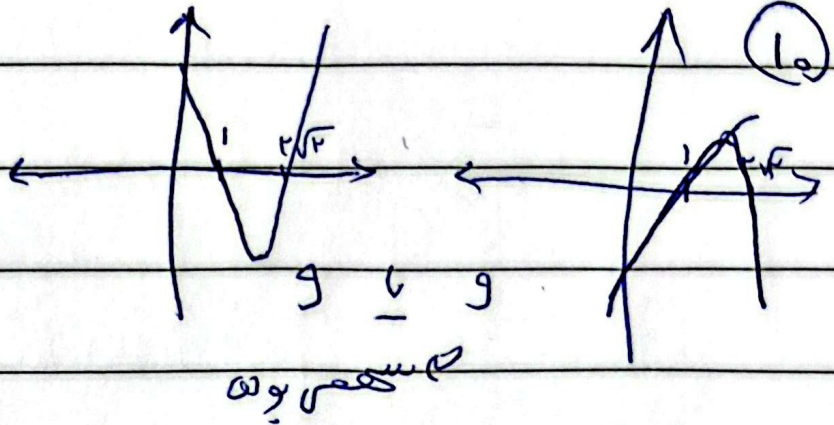
$$f(m) = a\sqrt{m} \quad a > 0$$

$$g(f(m)) = 0$$

$$g(m) = 0$$

$$\rightarrow m_1 \leq 1$$

$$m_P \leq P/P$$



$$f(m) = \begin{cases} m_1 \leq 1 \rightarrow a\sqrt{m_1} \rightarrow m'_1 \leq 1 \\ m_P \leq P/P \rightarrow a\sqrt{m} \leq P/P \rightarrow m'_1 \leq P \end{cases}$$

$$m'_1 = a'_1 \leq P/P \leq 1$$