

$$f(m) = \begin{cases} m-1 & [m] > \varepsilon \\ \varepsilon m + \mu & [m] \leq \varepsilon \end{cases} \rightarrow \overline{f(m) - m + 1} \rightarrow f(m) = \begin{cases} m-1 & a > a \\ \varepsilon m + \mu & a \leq a \end{cases} \rightarrow f(m) - m + 1 > 0$$

$$\rightarrow m-1 - m + 1 > 0 \rightarrow a > 0 \rightarrow \boxed{a > a} \rightarrow \varepsilon a + \mu - a + 1 > 0 \rightarrow \mu m + \varepsilon > 0 \rightarrow a > -\frac{\mu}{\varepsilon}$$

$$\rightarrow -\frac{\varepsilon}{\mu} \leq a < a \rightarrow D_f = \left[-\frac{\varepsilon}{\mu}, +\infty\right)$$

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$$y = \frac{\mu \varepsilon m^{\mu} + \mu^2 m^{\mu} + 11a + \mu}{(\varepsilon m^{\mu} + \varepsilon m + 1)^{\mu}} \rightarrow \frac{\mu (11a^{\mu} + 11\mu m^{\mu} + \mu m + 1)}{((\mu m + 1)^{\mu})^{\mu}} \rightarrow \frac{\mu (\mu m + 1)^{\mu}}{(\mu m + 1)^{\varepsilon}} \rightarrow \frac{\mu}{\mu m + 1}$$

$$\rightarrow D_f = IR - \left\{\frac{1}{\mu}\right\}$$

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$$f(m) = \begin{cases} \frac{a^{\mu} + \mu m^{\mu} - a - \mu}{a^{\mu} - 1} & a \neq \pm 1 \\ \frac{a m + \mu}{a + b} & a = \pm 1 \end{cases} = g(m) = a + c \rightarrow a + c = \frac{a^{\mu} + \mu m^{\mu} - a - \mu}{a^{\mu} - 1} \rightarrow a(\mu^{\mu} - 1) + c(\mu^{\mu} - 1) = a^{\mu} + \mu m^{\mu} - a - \mu$$

$$\rightarrow a^{\mu} - a + c\mu^{\mu} - c = a^{\mu} + \mu m^{\mu} - a - \mu \rightarrow c = \mu \rightarrow g(m) = a + \mu \rightarrow a = 1 \rightarrow y = \mu \rightarrow \frac{a + \mu}{1 + b} = \mu \rightarrow \mu^2 b = a + \mu$$

$$\rightarrow \mu b - a = -1 \rightarrow a = -1 \rightarrow y = 1 \rightarrow \frac{-a + \mu}{-1 + b} = 1 \rightarrow \frac{-(-1) + \mu}{-1 + b} = 1 \rightarrow a + b = \mu \rightarrow a + b + \mu b - a = \mu$$

$$\rightarrow \varepsilon b = \mu \rightarrow b = \frac{\mu}{\varepsilon} \rightarrow a = \mu / \mu \rightarrow b + c = \mu / \mu + \mu = \mu / \mu$$

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$$f(m) = g(m) \rightarrow \frac{a^{\mu} - 1}{a^{\mu} + c m + b} = \frac{a + 1}{a - c} \rightarrow \frac{a^{\mu} - 1}{a^{\mu} + c m + b} = \frac{(m+1)(m-1)}{(m-c)(a-1)} \rightarrow a^{\mu} + c m + b = (m-c)(m-1)$$

$$a^{\mu} + c m + b = m^2 - (c+1)m + c \rightarrow a = (a-c)^{\mu} \rightarrow a^{\mu} - (c+1)a + c = a^{\mu} - \mu c m + c^{\mu}$$

$$\rightarrow a + b + c = 0$$

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$$f(m) = (m-\mu)^{\mu}(m-1) \rightarrow g(m) = f(m+1) + f(1-m) \rightarrow g(m) = ((m+1)-\mu)^{\mu}((m+1)-1) + ((1-m)-\mu)^{\mu}((1-m)-1)$$

$$g(m) = (m-\mu)^{\mu}(m) + (-m-\mu)^{\mu}(-m) \rightarrow g(m) = m((m-\mu)^{\mu} - (m+\mu)^{\mu}) = m(-1)m \rightarrow g(m) = -1m^{\mu}$$

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$f(1-m) = \begin{cases} m+1 & m \leq 0 \\ \varepsilon m & m > 0 \end{cases} \rightarrow f(-1) + f(1) = ? \rightarrow m = -1 \rightarrow 1-m = -1 \rightarrow m = 1 \rightarrow f(-1) = f$ $m = 1 \rightarrow 1-m = 0 \rightarrow m = -1 \rightarrow f(1) = 1 \rightarrow f(1) + f(-1) = 1 + \varepsilon \rightarrow f(1) + f(-1) = \omega$	6
$f(m+1) = m^2 + 1 \rightarrow f(4) = ? \rightarrow m+1 = 4 \rightarrow m+1-4 = 0 \rightarrow (m+1)(m-2) = 0$ $m = -1 \text{ و } 3 \quad m = 2 \text{ و } 3 \rightarrow m = 2 \rightarrow f(4) = (2)^2 + 1 = 4 + 1 = 5 \rightarrow f(4) = 5$	7
$f(m) = m^2 + m \rightarrow f(m-1) + f(1-m) \rightarrow f(m-1) = (m-1)^2 + (m-1) \rightarrow f(m-1) = (m-1)(m-1+1)$ $f(1-m) = (1-m)^2 + (1-m) \rightarrow f(1-m) = (1-m)((1-m)^2 + 1) \rightarrow f(1-m) = -(m-1)((m-1)^2 + 1)$ $f(m-1) + f(1-m) = (m-1)((m-1)^2 + 1) + (-(m-1)((m-1)^2 + 1)) \rightarrow f(m-1) + f(1-m) = 0$	8
$f(m) = \sqrt{\varepsilon m - 3\varepsilon} + k - 1 \quad g(m) = \sqrt{b - \varepsilon m} + 1 \rightarrow f \circ g = \{1\} \rightarrow D_f \cap D_g = \{1\}$ $D_f = [\frac{3\varepsilon}{\varepsilon}, +\infty), D_g = (-\infty, \frac{b}{\varepsilon}] \rightarrow f(1) = \sqrt{\varepsilon - 3\varepsilon} + k - 1 \rightarrow g(1) = \sqrt{b - \varepsilon} + 1$ $\rightarrow D_{f \circ g} = \{1\} \rightarrow \frac{3\varepsilon}{\varepsilon} = \frac{b}{\varepsilon} = 1 \rightarrow \varepsilon = \frac{b}{3} \rightarrow b = 3\varepsilon \rightarrow f(1) + g(1) = k \rightarrow k - 1 + 1 = k$ $k = -2 \rightarrow k = -1 \rightarrow \varepsilon - \frac{b}{3} - k = \varepsilon - 1 + 1 = \varepsilon$	9
$f(m) = \sqrt{m - n} + n \rightarrow g(m) = \sqrt{m + 1} \rightarrow D_{f \circ g} = [-1, 1] \rightarrow D_f = (-\infty, m]$ $D_g = [-1, +\infty) \rightarrow D_{f \circ g} = [-1, m] \rightarrow m = 1 \rightarrow f \circ g(1) = \sqrt{1 - n} + n = 1 \rightarrow \sqrt{1 - n} + n = 1$ $f \circ g(1) = 1 + n - \sqrt{1 - n} = 1 \rightarrow n = \sqrt{1 - n} - 1 \rightarrow n + 1 = \sqrt{1 - n} - 1 \rightarrow n + 1 = \sqrt{1 - n}$	10