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دانشگاه آزاد اسلامی

$$g \circ f(n) = g(f(n)) \Rightarrow D_{g \circ f} = \{x \in D_f \mid f(n) \in D_g\} \quad (1)$$

$$I) D_f \Rightarrow f(n) = \sqrt[n]{n} \Rightarrow n^{1/n} > 1$$

$$n-1 > 0$$

$$I) n > 1$$

$$n^{1/n} > n^{1/(n-1)}$$

$$I \cap II = n > 1$$

$$\Rightarrow (n-1) > 1$$

$$II) n > 1$$

$$II) D_g \Rightarrow -x^2 + 4x - 5 > 0$$

$$\hookrightarrow x^2 - 4x + 5 < 0 \Rightarrow \frac{4 \pm \sqrt{16-20}}{2} \Rightarrow D_g = \{x\}$$

$$I \cap II \Rightarrow n > 1 \cap \{x\} = \{x\} \Rightarrow D_{g \circ f} = \{x\}$$

$$f \circ g(n) = f(g(n)) \Rightarrow f(n^2 - 4n + 5) = (n^2 - 4n + 5)^2 - 4(n^2 - 4n + 5) + 1$$

$$g \circ f(n) = g(f(n)) \Rightarrow g(n^2 - 4n + 5) = (n^2 - 4n + 5)^2 - 4(n^2 - 4n + 5) + 1$$

$$\Rightarrow n^2 - 4n + 5 = n^2 - 4n + 5$$

$$= n^2 - 4n + 5$$

$$\Rightarrow \Delta = 16 - 20 = -4$$

$$\Rightarrow n = \frac{4 \pm \sqrt{-4}}{2} = \frac{4 \pm 2i}{2} = 2 \pm i$$

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$$g(f(u)) = 5u^2 + 11$$

$$g(vu) = 5u^2 + 11$$

$$vu = t \Rightarrow u = \frac{t}{v}$$

$$\hookrightarrow g(t) = 5\left(\frac{t}{v}\right)^2 + 11 \Rightarrow \frac{5t^2}{v^2} + 11 \Rightarrow g(u) = \frac{5u^2}{v^2} + 11$$

$$\hookrightarrow g(u-v) = \frac{5(u-v)^2}{v^2} + 11 \rightarrow \text{لقد بدلت } u \text{ بـ } (u-v) \text{ في المعادلة}$$

دقيق في الحسابات  
في هذه الخطوة  
=  $u$  و  $v$  في المعادلة

$$f(g(u)) = 3u^2 - 4u + 1$$

$$f(u) = 3u - 5$$

$$\Rightarrow 3(g(u)) - 5 = 3u^2 - 4u + 1$$

$$3g(u) = 3u^2 - 4u + 6$$

$$g(u) = \frac{3u^2 - 4u + 6}{3}$$

$$\Rightarrow g \circ f(u) = g(f(u)) \Rightarrow \frac{3(3u-5)^2 - 4(3u-5) + 6}{3}$$

$$\rightarrow \frac{9u^2 - 10u + 10}{3}$$

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$$\rightarrow \frac{9u^2 - 10u + 10}{3}$$

$$\Rightarrow g \circ f(u) = 3u^2 - 10u + 10$$

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$$\Rightarrow f - g(u) = -u + 0$$

$$\hookrightarrow f - g(u) = -u + b$$

$$C_n = \cdot \Rightarrow f - g(n) = \Delta$$

$$\underbrace{f(\cdot) - g(\cdot)}_v = 0$$

$$y \Rightarrow g(\cdot) = -1^2$$

$$\Rightarrow g(n) = a$$

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$$u(u, v) \leq \dots$$

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+ 0 - 0 +

$$C^{\infty} \rightarrow \{0, 1, 2\}$$

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$$\frac{n^p - p}{n} \xrightarrow{\text{تكامل}} n - \frac{p}{n} \xrightarrow{\text{تفاضل}} (n - \frac{p}{n})^p = n^p + \frac{p}{n^p} - p \quad (V)$$

$$n^p + n - p - \frac{p}{n} + \frac{p}{n^p} \leftarrow (n - \frac{p}{n})^p \text{ بالحدود، فوجدنا } \leftarrow$$

$$\Rightarrow n - \frac{p}{n} = t \Rightarrow f(t) = t^p + t$$

$$\Rightarrow f(n) = n^p + n$$

$$f(g(n)) \rightarrow A(Df \cdot g) : \log_p \quad (A)$$

$$\left\{ \begin{array}{l} 1n - n^p \\ \downarrow \\ B(Rf \cdot g) \Rightarrow \log_p \end{array} \right. \quad \begin{array}{l} \frac{-b}{2a} = \frac{-1}{2} = -\frac{1}{2} \\ \uparrow \\ 1n - n^p \end{array} \quad \begin{array}{l} \hookrightarrow 1n - n^p > \\ -n^p + 1n > \\ -n(n-1) > \\ \frac{0}{-1+1} \end{array}$$

$$B = Rf \cdot g : (0, 1]$$

$$A \cap B : (0, 1] \Rightarrow [1, 2] \rightarrow G_p$$

$$f(f(n)) = 1 - p f^p(n)$$

$$f(n) : t = f(t) = 1 - p t^p \Rightarrow f(n) = 1 - p n^p$$

$$\begin{aligned} h(g(n)) &= (n-1)^p + p(n-1) + 1 \\ &= n^p - p n^p + p n - p + p n - p + 1 \\ &= n^p - p n^p + 2p n - p \end{aligned}$$

$$\left\{ \begin{array}{l} \Rightarrow n^p - p n^p + 2p n - p = 1 - p n^p \\ n^p + 2p n - p = 1 \end{array} \right.$$

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$$g(f(u)) = au^p + pu$$

$$u = \frac{\epsilon}{n}$$

$$\Rightarrow g(u - \frac{\epsilon}{n}) = au^p + pu$$

$$(g(u) = 1)$$

$$u - \frac{\epsilon}{n} = u \Rightarrow u - pu - \epsilon = 0$$

$$u = -1, p$$

$$\} \Rightarrow au^p + pu = 1$$

$$u = -1, a - p = 1$$

$$-a = 1 \Rightarrow \underline{a = -1}$$

$$u = \frac{\epsilon}{n} \Rightarrow \epsilon a + 1 = 1$$

$$\Rightarrow \underline{a = 0}$$