کنکاش ۸ — پردیس ایرانشهر — ۱۸٫۲۵

page: ( ) Subject: Year: Month: Day:

۱ـ $f(x)=\sqrt{\log_2^{x-1}} \to \log_2^{x-1} \geq 0$

$x-1 \geq 1 \to x \geq 2$, $x-1>0 \to x>1$ $\to x \geq 2$

$g(x)=\sqrt{-x^2+4x-4}$ $\to -x^2+4x-4 \geq 0$ $\to x=2$

$D_{gof}=\{x \in D_f ,\ f(x) \in D_g\}$

$x \geq 2$ I, $\sqrt{\log_2^{x-1}}=2 \Rightarrow \log_2^{x-1}=4 \to x-1=16 \to x=17$ II

$I \cap II = x = 17$ ✓ (۲)

(۱) $2(x^2-3x+8)-5=(2x-5)^2-3(2x-5)+8 \to 2x^2-6x+11=4x^2+25-20x-6x+15+8$

$\to 2x^2-10x+37=0$ $\alpha^2+\beta^2=(\alpha+\beta)^2-2\alpha\beta=5^2-2\times\frac{37}{2}=25-37=-12$

$2x^2-20x+37=0$ ↳ $100-37=63$

۳ـ $2x=t \to x=\frac{t}{2}$ $g(t)=5(\frac{t}{2})^2+11=\frac{5t^2}{4}+11$

$g(x-7)=\frac{5}{4}(x-7)^2+11 = 11$ ✓ (۲)

۴ـ $3g-4=3x^2-6x-1 \to 3g=3x^2-6x+3 \to g(x)=x^2-2x+1$

$gof(x)=(3x-4)^2-2(3x-4)+1=9x^2+16-24x-6x+8+1=9x^2-30x+25$ ✓ $=(3x-5)^2$ (۲)

۵ـ $g(x)=\frac{3}{2}f(x)-7$ $f(x)-g(x)=-x+5 \to f(x)-(\frac{3}{2}f(x)-7)=-x+5$

$\to -\frac{1}{2}f(x)+7=-x+5 \to f(x)=2x+4$ $g(x)=\frac{3}{2}(2x+4)-7=3x-1$

$fog(x)=2(3x-1)+4=6x+2$ $6x+2=0 \to x=-\frac{1}{3}$ $a=-\frac{1}{3}$ ✓ (۲)

Arman

۶

$fog(x) = 9^{\log_3 x} = x^{\log_3 9} = x^2$

$gof(x) = \log_3 9^x = x \times \log_3 9 = 2x$

$\rightarrow x^2 < 2x \rightarrow x^2 - 2x < 0$

$x(x-2) < 0$

$0 \quad 2$: $+ \quad - \quad +$ $\rightarrow x \in (0,2)$

گزینه ۲ صحیح

۲

۷

$f\left(\frac{x^2-2}{x}\right) = x^2 + x - 4 - \frac{2}{x} + \frac{4}{x^2} \rightarrow f\left(x - \frac{2}{x}\right) = x - \frac{2}{x} + \left(x - \frac{2}{x}\right)^2$

$\rightarrow f(x) = x^2 + x$

۲

۸

$f(x) = \log_2 x \rightarrow x > 0 \qquad g(x) = 8x - x^2 \rightarrow x \in R$

$D_{fog} = \{x \in D_g \,,\, g(x) \in D_f\} \rightarrow -x^2 + 8x > 0$

$x \in R$ I $\qquad 0 < x < 8$ II $\rightarrow$ I $\cap$ II $= x \in (0,8)$ A

۱٫۵

$-x^2 + 8x \rightarrow (0,16]$

$g(x) = -x^2 + 8x \rightarrow g(x) \in (-\infty, 16] \qquad fog(x) = \log_2$

$\rightarrow R_{fog(x)} = (-\infty, 4]$ B $\qquad A \cap B = [0,4]$ گزینه ۵ صحیح

یا $(0,4]$ → گزینه ۴ صحیح

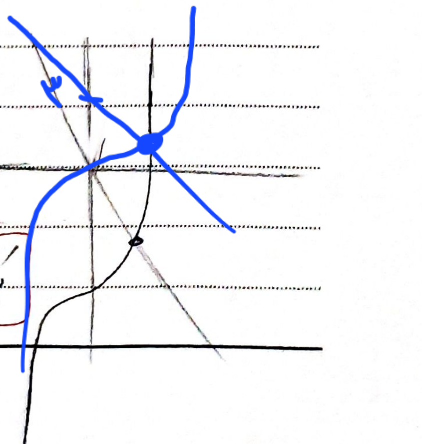
۹

$f(f(x)) = 1 - 3f^2(x) \rightarrow f(x) = 1 - 3x^2$

$h(g(x)) = (x-1)^3 + 2(x-1) + 1 = x^3 - 1 - 3x(x-1) + 2x - 2 + 1 = x^3 - 1 - 3x^2 + 3x + 2x - 2 + 1$

$= x^3 - 3x^2 + 5x - 2$

$x^3 - 3x^2 + 5x - 2 = 1 - 3x^2 \rightarrow x^3 + 5x - 3 = 0 \rightarrow x^3 - 3 = -5x$



یک جواب دارد

۱٫۷۵

Arman

درس ایرانیو /

Subject:

Year: Month: Day:

$x - \frac{4}{x} = 3 \Rightarrow x^2 - 3x - 4 = 0 \rightarrow x = -1 \mid 4$ — 10

$g(f(x,y)) = ax^3 + 2x \xrightarrow{x=4} 64a + 8 = 8 \rightarrow a = 0$

$x = -1 \downarrow \quad -a - 2 = 8 \rightarrow a = -10$

(۲)