پرهام مراحی

te: Sub:

۱) $f(0)=1$, $f(3)=5 \Rightarrow \frac{4}{3}$ $f'(3)=\frac{4}{3}$

۲) $\frac{1}{3}$ $y-1=\frac{1}{3}(x+1) \Rightarrow y=\frac{1}{3}x+\frac{4}{3}$

$\sqrt{ax-1}=\frac{1}{3}x+\frac{4}{3} \Rightarrow x^2+(8-9a)x+25 \Rightarrow \Delta=0 \rightarrow a=-\frac{2}{9}$

$f(x)=\sqrt{2x-1} \Rightarrow a=2$

۳) $g'(1)=\frac{(2+x)(4)-(2+x)}{16}=\frac{8+4x-2-m}{16}=\frac{6+3m}{16}$

$4y-2x=8 \Rightarrow x=\frac{3m+6}{16} \Rightarrow \frac{3}{4}=x \Rightarrow m=2$

$g(1)=\frac{1+2+1}{4}=1 \Rightarrow \frac{3x+n}{4}=1 \Rightarrow m+n=3$

۴) $(3\sqrt{3}-4)/(\frac{5x}{3})$ $f(x)=\frac{(3-\sin x)(9+\sin^2 x+3\sin x)}{(3-\sin x)(3+\sin x)}$

$g(x)=\frac{-3\cos x}{(3+\sin x)^2}$ $f'(x)=\frac{(2\sin x+3\cos x)(3\sin x)-\cos x\sin^2 x}{(3+\sin x)^2}$

$x=\frac{5\pi}{3}$ $\frac{-9/8-\frac{3}{8}+\frac{3}{2}\sqrt{3}}{\left(\frac{6-\sqrt{3}}{2}\right)^2}$

۵) $g'(5\sqrt{3})\,f'(g(5\sqrt{3}))=(fog)'(5\sqrt{3})$

$fog(x)=\frac{-1}{\sqrt{2(\ldots)}}=-x \Rightarrow (fog)'(\sqrt{3})=-1$

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$f(x) = x\,g(x) + 1 \Rightarrow g(x) = \frac{f(x)+1}{x} = \left(\frac{1+\sin x}{1+\sin x}\right)^{2} - 1$ (۶

$\Rightarrow \lim_{x\to 0} g(x) = 2\left(\frac{-1+\sin x}{1+\sin x}\right)\left(\frac{\cos x(1+\sin x) - x\cos x(-1+\sin x)}{1+\sin x}\right)$

$(2)(-1)(2) = -8$

$y = -(x^2+1) \Rightarrow f'(x) = -2x$ $f'(\alpha) f'(-\alpha) = -1$ (۷

$(-2\alpha)(2\alpha) = -1 \Rightarrow \alpha^2 = \frac{1}{4} \quad \alpha > 0 \Rightarrow \alpha = \frac{1}{2}$ $f\left(\frac{1}{2}\right) = \frac{-3}{4}$

$\frac{f(x)-f(0)}{x-0} = \frac{2\sqrt{x}(2x^2+3)}{x}$

$f'(x) = \frac{4x^2+3}{\sqrt{x}} + 8x(2\sqrt{x})$ $\Rightarrow \frac{2\sqrt{x}(2x^2+3)}{\sqrt{x}} = 4x^2+3$ (۸

$f'(x) = 4x^2 + 3 + 8x^2 \Rightarrow 8x^2 + 6 = 12x^2 + 3$

$\Rightarrow 12x^2 = 3 \quad x^2 = \frac{1}{4}$

$\frac{4\sqrt{\frac{1}{4}}\left(4\left(\frac{1}{4}\right)+3\right)}{\frac{1}{4}} = \frac{16}{\sqrt{4}} = 8\sqrt{4}$

$g'(x) = \frac{-x}{(x^2-1)\sqrt{x^2-1}} \Rightarrow g'\left(\frac{\sqrt{5}}{2}\right) = -4\sqrt{5}$ (۹

$f(x) = (x[x])^3 \Rightarrow f'(x) = 3(x[x])^2[x]$

$x \to \left(\frac{\sqrt{5}}{2}\right) \Rightarrow g(x) = 4$ $g' = g'(x) f'(g(x)) \Rightarrow$

$g'\left(\frac{\sqrt{5}}{2}\right) = -4\sqrt{5} f'(4) = -4\sqrt{5} \times 3(16) \times 2 \Rightarrow$

۸ سراسر