نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..24.. کلاس دوازدهم تجربی B.....

۱

$f'(3) = m_{\text{خط مماس}}$ $\quad \begin{matrix}1 & 3\\ 1 & 5\end{matrix}$ $\rightarrow m = \frac{5-1}{3-0} = \frac{4}{3}$

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$m_{\text{خط مماس}} = \frac{1}{3} \rightarrow f'(A) = \frac{1}{3}$ ، خط مماس $= \frac{1}{3}x + \frac{4}{3}$

$f(x) = \frac{a}{2\sqrt{ax-1}} \rightarrow f'(A) = \frac{a}{2\sqrt{Aa-1}} = \frac{1}{3} \rightarrow 3a = 2\sqrt{Aa-1}$

$f(A) = \frac{1}{3}A + \frac{4}{3} = \sqrt{Aa-1} \rightarrow \frac{1}{9}A^2 + \frac{8}{9}Aa + \frac{16}{9} = Aa - 1$

۳

$f(x) = \begin{matrix}1 & m & 1\\ 0 & 1 & 3\end{matrix} \rightarrow f'(x) = \frac{x^2+6x+3m-2}{(x+3)^2} \rightarrow \frac{5+3m}{16} = \frac{3}{4} \rightarrow 3m = 7 \rightarrow m = \frac{7}{3}$

$f'(1) = \frac{3}{4}$

$f(1) = \frac{13}{12} = 4f(1) - 3 - n \rightarrow n = \frac{4}{3} - \frac{13}{12} \rightarrow n = \frac{3}{12} = \frac{1}{4}$

$\frac{13}{3}$ $\quad \frac{16}{12}$ $\quad \frac{7}{3} + \frac{1}{4} \rightarrow \frac{31}{12}$

۴

$f(x) = \frac{27 - \sin^3 x}{(9 - \sin^2 x)} = \frac{(3-\sin x)(9+3\sin x+\sin^2 x)}{(3-\sin x)(3+\sin x)} = \frac{3}{3+\sin x}$

$3g'(\frac{5\pi}{3}) - f'(\frac{5\pi}{3}) = (\frac{g}{f})'(x) \times f^2(x) + 2g'(x) \rightarrow \frac{3}{9+3\sin x+\sin^2 x} = (\frac{3}{9+3\sin x+\sin^2 x})'$

$= \frac{-(3\cos x + 2\sin x\cos x)}{(9+3\sin x+\sin^2 x)^2} \times f(\frac{5\pi}{3})^2 + 2(\frac{-\cos x}{3+\sin x}) = \frac{-(\frac{3}{2} + 2(\frac{1}{2}x - \frac{\sqrt{3}}{2})}{(9+\frac{3\sqrt{3}}{2}+\frac{3}{4})^2} \times (\frac{9+3\sin x+\sin^2 x}{3+\sin x})^2 + 2(\frac{-\frac{1}{2}}{3+\frac{\sqrt{3}}{2}})$

$= \frac{\frac{3-\sqrt{3}}{2}}{\frac{6-\sqrt{3}}{2}} = \frac{3-\sqrt{3}}{6-\sqrt{3}}$

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$(fog)'(x) = ? \Rightarrow -\frac{1}{\sqrt[5]{x^5 - |x^5| + |x^5 + |x^5||}} = \frac{-1}{\sqrt[5]{4x^5}} \Rightarrow \frac{20x^4}{\frac{5}{5}\sqrt[5]{(4x^5)^4}}$

$= \frac{20x^4}{20x^5} = \frac{1}{x} = \frac{1}{\sqrt[5]{3}}$

$f(x)=\frac{\sin^2 x-2\sin x+1}{\sin^2 x+2\sin x+1}$ $\rightarrow g(x)=\frac{(-4\sin x)}{(\sin x+1)^2(x)}$ $\rightarrow \lim_{x\to 0} g(x)$ $\frac{-4\sin x}{(\sin x+1)^2(x)}$

$g(x)=\frac{f(x)-1}{x}$ ساده $\rightarrow \frac{-4x}{(x+1)^2(x)} \rightarrow \frac{-4}{1}=-4$ ۶

$y=-x^2-1 \rightarrow y'=-2x$ $\frac{y_1=y_2}{x_1,x_2}$ $-x_1^2-1=-x_2^2-1$

$\rightarrow x_1^2=x_2^2 \rightarrow x_1=-x_2$

$y'_1=-\frac{1}{y'_2}$ $-2x_1=\frac{1}{2x_2} \rightarrow 4x_1^2=1$

$x_1=\frac{1}{2}$

$x_2=-\frac{1}{2}$

$\frac{1}{2}$: طول نقطه تماس ۷

$f(x)=2x^{\frac{1}{2}}(4x^2+3)=8x^{\frac{5}{2}}+6x^{\frac{1}{2}} \rightarrow y'=20x^{\frac{3}{2}}+3x^{-\frac{1}{2}}=m_l$

$y=m_l x \rightarrow (\underbrace{20x^{\frac{3}{2}}+3x^{-\frac{1}{2}}}_{20x^{\frac{5}{2}}+3x^{\frac{1}{2}}})x=8x^{\frac{5}{2}}+6x^{\frac{1}{2}} \rightarrow 12x^{\frac{5}{2}}-3x^{\frac{1}{2}}=0$

$3x^{\frac{1}{2}}(4x^2-1)=0 \Leftrightarrow x=0 \rightarrow m_l=0$

$x=\frac{1}{2} \rightarrow 20\sqrt{(\frac{1}{2})^3}+3\sqrt{2}=10\sqrt{\frac{1}{2}}+3\sqrt{2}=m_l$ ۸

$\frac{\frac{1}{x}(-2x^2+x+1)-(-4x+1)(\sqrt{x})}{(-2x^2+x+1)^2}=m_l$

$m_l x=y=x\left(\frac{\frac{1}{2x}(-2x^2+x+1)-(-4x+1)(\sqrt{x})}{(-2x^2+x+1)^2}\right)=\frac{\sqrt{x}}{-2x^2+x+1}$ ۹

$\sqrt{x}(-2x^2+x+1)=(-2x^2+x+1)-(-4x+1)(\sqrt{x^3})$

$(fog)'(x)=g'(x)f'(g(x))=\frac{-48}{\sqrt{5}}=\frac{-48\sqrt{5}}{5} \rightarrow -48\sqrt{5}$ ضربدر $\frac{1}{5}$

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

$f'(x)=3(x[x])^2\times 1=12$

$g(\frac{\sqrt{5}}{2})$ ۱۰