نام و نام خانوادگی: آدرینا حمیدی | کلاس: ۱۲B | شماره تکلیف ۴

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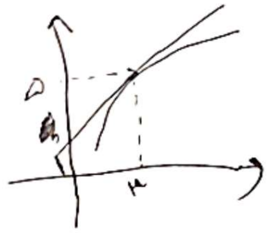

$f'(3)=m=\frac{4}{3}$

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$m=\frac{2-1}{2+1}=\frac{1}{3} \quad y-1=\frac{1}{3}(x+1) \Rightarrow y=\frac{x}{3}+\frac{4}{3}$

$\frac{9a+4}{3}=\sqrt{9a-1}$

$\frac{a+4}{3}=\sqrt{9a-1}$

$\frac{(a+4)^2}{9}=9a-1$

$a^2+8a+16=81a-9$

$a^2+(8a-81a)+25=0$

$a(8-9a)$ $\quad 8-9a=10 \quad 8-9a=-10$ $\quad a=-\frac{2}{9} \quad a=2$

$\sqrt{2(5)-1}=3$

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$y=\frac{x^2+mx+1}{x+3} \qquad 4y-3x=n$

$y'=\frac{(2x+m)(x+3)-(1)(x^2+mx+1)}{(x+3)^2}=\frac{3}{4}$

$\left(1, \frac{m+2}{4}\right) \qquad \Rightarrow 2+m=4$

$4(1)-3(1)=n \Rightarrow n=1 \qquad \frac{2+m}{4}=1 \quad m=2 \qquad m+n=3$

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

$g(x)=\frac{3}{3+\sin x}$

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

$=\left(\frac{-\sin x(3+\sin x)}{3+\sin x}\right)'=-\cos x=-\cos\frac{5\pi}{3}$

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

۵

$f(x)=-\frac{1}{\sqrt[5]{x+|x|}} \qquad g(x)=\frac{1}{x^5+|x^5|} \qquad g'(\sqrt[5]{3})f'(g(\sqrt[5]{3}))=(f\circ g)'(\sqrt[5]{3})$

$\xrightarrow{x>0} \frac{1}{2x^5}$

$\xrightarrow{x>0} \frac{-1}{\sqrt[5]{2x}}$

$f\circ g=-\frac{1}{\sqrt[5]{2\left(\frac{1}{2x^5}\right)}}=-x \qquad (f\circ g)'(\sqrt[5]{3})=-1$

$f(x)=\left(\frac{\sin x-1}{\sin x+1}\right)^2$ $\quad f(x)=xg(x)+1$ $\quad \lim_{x\to 0} g(x)$

$$f'(x)=\lim_{x\to 0}\frac{f(x)-f(0)}{x-0}=\lim_{x\to 0}\frac{xg(x)+1-1}{x}=\lim_{x\to 0}g(x)$$

$$f'(x)=2\left(\frac{2\cos x}{(\sin x+1)^2}\right)\left(\frac{\sin x-1}{\sin x+1}\right) \Rightarrow f'(0)=2(2)(-1)=\boxed{-4}$$ 6

$y=x^2+1 \Rightarrow y=-x^2-1$

$f'(\alpha)f'(-\alpha)=-1 \Rightarrow (-2\alpha)(2\alpha)=-1 \Rightarrow \alpha^2=\frac{1}{4}$

$\alpha>0$ $\quad \alpha=\frac{1}{2}$ $\quad f\left(\frac{1}{2}\right)=-\frac{1}{4}-1=-\frac{5}{4}$ 7

$y=-\frac{5}{4}$

$\boxed{h=\frac{5}{4}}$

$f(x)=2\sqrt{x}(4x^2+3)$ $\quad f'(\alpha)=f'\left(\frac{1}{2}\right)=\boxed{8\sqrt{2}}$

$8x^{\frac{5}{2}}+6x^{\frac{1}{2}}$

$f'(x)=8\times\frac{5}{2}x^{\frac{3}{2}}+6\left(\frac{1}{2}\right)x^{-\frac{1}{2}} \Rightarrow f'(\alpha)=x^{-\frac{1}{2}}(20x^2+3)$ $\quad 20\alpha^2+3=8\alpha^2+6$ 8

$12\alpha^2=3$

$\frac{f(\alpha)-0}{\alpha-0}=f'(\alpha)$ $\quad \frac{8\alpha^{\frac{5}{2}}+6\alpha^{\frac{1}{2}}}{\alpha}=8\alpha^{\frac{3}{2}}+6\alpha^{-\frac{1}{2}}=\alpha^{-\frac{1}{2}}(8\alpha^2+6)$ $\quad \alpha^2=\frac{1}{4}$

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

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

$\frac{\sqrt{x}}{-2x^2+x+1}=\beta x$ 9

$-2\beta x^3+\beta x^2+\beta x-\sqrt{x}=0$

$-6\beta x^2+2\beta x+\beta-\frac{1}{2\sqrt{x}}=0$

$f(x)=(x[x])^3$ $\quad g(x)=\frac{1}{\sqrt{x^2-1}}$ $\quad (f\circ g)'\left(\frac{\sqrt{5}}{2}\right)=g'f'\circ g\left(\frac{\sqrt{5}}{2}\right)$

$g'(x)=\frac{-1}{x^2-1}\cdot\frac{2x}{\sqrt{x^2-1}}=-4(\sqrt{5})(2)=-8\sqrt{5}$

$\frac{(-8)48\sqrt{5}}{-48\sqrt{5}}=\boxed{8}$ $\quad (f\circ g)'\left(\frac{\sqrt{5}}{2}\right)=48(-8)\sqrt{5}$ 10

$g\left(\frac{\sqrt{5}}{2}^-\right)=\frac{1}{\sqrt{\frac{1}{4}}}=2^+$

$3(x[x])^2([x])=3((2)(2))^2(2)=48$