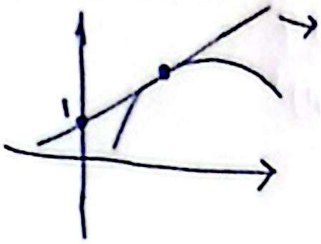
نام و نام خانوادگی ......امیرعلی نوارزنجی... پاسخنامه تشریحی تکلیف شماره .... کلاس ....

 در نقطه تماس: $\begin{vmatrix}0\\1\end{vmatrix} , \begin{vmatrix}3\\5\end{vmatrix} \Rightarrow m=\frac{4}{3} \Rightarrow f'(3)=\frac{4}{3}$ $y=mx+b$ در نقطه $x=3$ مماس بودند.	۱
$(2,2), (-1,1) \to m=\frac{2-1}{2-(-1)}=\frac{1}{3} \Rightarrow y=\frac{1}{3}x+\frac{4}{3}=\sqrt{ax-1}$ $\Rightarrow x+4=3\sqrt{ax-1} \Rightarrow x^2+8x+16=9ax-9 \Rightarrow x^2+(8-9a)x+25$ $\Delta=0 \Rightarrow (8-9a)^2=100 \Rightarrow 8-9a=10 \Rightarrow a=\frac{-2}{9} \to$ غ ق (تعریف نشده) $f(x)=\sqrt{2x-1}=\sqrt{9}=3 \Leftarrow 8-9a=-10 \Rightarrow a=2$	۲
$4y=3x+n \to y=\frac{3}{4}x+\frac{n}{4} \Rightarrow y_1'=y_2'$ ، $y_2=\frac{x^2+mx+1}{x+3} \to \frac{m+2}{4}$, $\frac{3}{4}$ $y_2'=\frac{4(2x+m)-(m+2)}{4\times4} \Rightarrow \frac{3(m+2)}{16}=\frac{3}{4} \Rightarrow$ $\boxed{m=2}$ $\frac{x^2+2x+1}{x+3} \Rightarrow x=1 \to y=1$ ، $1=\frac{3}{4}+\frac{n}{4} \Rightarrow n=1$ ، $m+n=3$	۳
$g'(x)=3(-1)(3+\sin x)^{-2}\cos x \Rightarrow g'(\frac{5\pi}{6})=-\frac{3\cdot\frac{1}{2}}{(3-\frac{\sqrt{3}}{2})^2}=\frac{-6}{(6-\sqrt{3})^2}$ $f(x)=\frac{(3-\sin x)(9+3\sin x+\sin^2 x)}{(3-\sin x)(3+\sin x)} \Rightarrow f(x)=\sin x+\frac{9}{\sin x+3}$ $f'(\frac{5\pi}{6})=\frac{1}{2}\left(1-\frac{36}{(6-\sqrt{3})^2}\right) \Rightarrow 3g'(\frac{5\pi}{6})-f'(\frac{5\pi}{6})=\frac{-1}{2}$	۴
$g'(x)\cdot f'(g(x)) \to f(g(x))'=-1$ $g(x)=\frac{1}{2x^5}$ ، $f(x)=\frac{-1}{\sqrt[5]{2x}} \Rightarrow f(g(x))=-x$	۵

Scanned with CamScanner

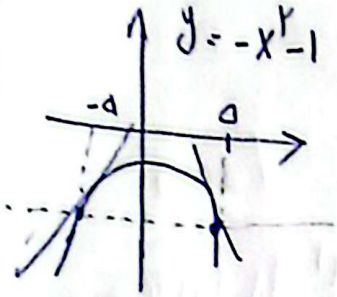
۶

$$f(x) = x \cdot g(x) + 1 \Rightarrow g(x) = \frac{f(x)-1}{x}$$

$$f(x)-1 = \frac{\sin^2 2x \sin x + 1 - \sin^2 x - 2\sin x}{(1+\sin x)^2} \Rightarrow g(x) = \frac{-4\sin x}{x(1+\sin x)^2}$$

$$\lim_{x\to 0} g(x) = \frac{-4 \times 1}{x(1)} = \boxed{-4}$$

۷



$y = -x^2 - 1 \rightarrow y' = -2x \begin{cases} \rightarrow a \Rightarrow y'_1 = -2a \\ \rightarrow -a \Rightarrow y'_2 = +2a \end{cases}$

$(-2a)(2a) = -1 \Rightarrow a = \frac{1}{2}$

$y = -\left(\frac{1}{4}\right) - 1 = \boxed{\frac{-5}{4}}$

۸

$d \rightarrow y = mx \Rightarrow mx = 2\sqrt{x}(4x+3) \xrightarrow{\times\sqrt{x}} mx = 2(4x+3)$

$t = \sqrt{x},\ x = t^2 \Rightarrow mt = 8t^2 + 6 \Rightarrow 8t^2 - mt + 6 = 0$

تشکیل دلتا $\rightarrow m^2 - 32t^2 = 0$

$\begin{cases} 8t^2 - 32t^2 = -6 \\ \Rightarrow -24t^2 = -6 \end{cases} \rightarrow t^2 = \frac{1}{4} \rightarrow t = \frac{\sqrt{2}}{2}$

$m = 32\left(\frac{2\sqrt{2}}{8}\right) \rightarrow m = 8\sqrt{2}$

۹

۱۰

$f(g(x)) = \left(g(x)\left[\frac{g(x)}{2}\right]\right)^3 = 8\,g(x)^3 = 8 \times 8\, g(x)^2$

$\left[g\left(\frac{\sqrt{5}}{2}\right)\right] = 2$

حاصل $= \frac{64 \times 8}{-64\sqrt{5}} = \boxed{\frac{-8\sqrt{5}}{5}}$