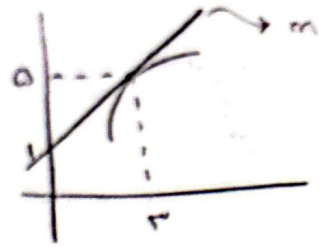
نام و نام خانوادگی ..... کلاس ..... شماره .....

۱



$m = \frac{۶}{۴} = f'(۳)$

۲

$\begin{vmatrix} -۱ & ۴ \\ ۱ & ۲ \end{vmatrix}$ $y - ۲ = \frac{۱}{۲}(x-۲)$ $\sqrt{۵x-۱} = \frac{x+۶}{۴}$

$m = \frac{۱}{۲}$ $y = \frac{۱}{۲}x + \frac{۶}{۴}$ $\frac{۵}{۲\sqrt{۵x-۱}} = \frac{۱}{۲}$ $a = ۲$ ✓ $a = -\frac{۲}{۹}$ ق ق ی

مماس $f(a) = g(a)$
$f'(a) = g'(a)$ $f(۳) = \sqrt{۲\times۵-۱} = ۳$

۳

$a\begin{vmatrix} ۱ \\ \frac{۲+m}{۶} \end{vmatrix}$ $۶y = -۴x - ۳$

مماس $\frac{۲+m}{۶} = \frac{۴}{۶} - \frac{۳}{۶}$

$\frac{m+۳}{۶} = \frac{۱}{۶}$ $m+۳ = ۱$

۴

$f = \frac{(۲-\sin x)(۹+\sin^۲x+۶\sin x)}{(۳-\sin x)(۳+\sin x)} = \frac{۲\sin x+۶}{\sin x+۳} + \frac{\sin^۲x}{\cos x+۲} = ۲ + \frac{\sin^۲x}{\sin x+۳}$

$f'(x) = \frac{۲\cos x \sin x - \cos x \sin x}{(\sin x+۳)^۲} = \frac{\sin x\cos x(\sin x+۳-\frac{۱}{۲}\sin x)}{(\quad)^۲}$

$\sin(\frac{۵\pi}{۴}) = -\frac{۲\sqrt{۲}}{۲}$
$\cos(\frac{۵\pi}{۶}) = -\frac{۱}{۲}$

$of'(a) = \frac{۲\cos}{(\sin+۳)^۲}$

۵

$(fog)'(۶) = \left(-\frac{۱}{۵\sqrt{\frac{۱}{۲x^۵}+\frac{۱}{۲x^۵}}}\right)' = \left(-\frac{۱}{۵\sqrt{\frac{۱}{x^۵}}}\right)' = (-x)' = -۱$

۶

$\frac{f-1}{x} = g$

$\lim_{x\to 0} \frac{f-1}{x} = \lim_{x\to 0} g$

$\stackrel{\text{hop}}{\rightarrow} \lim_{x\to 0} f' = f'(0)$

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

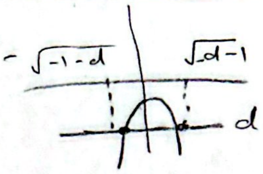
$f' = 2\left(1 - \frac{2}{\sin x+1}\right)\left(\frac{-2\cos x}{(\sin x+1)^2}\right)$

$2\left(1 - \frac{2}{1}\right)\left(\frac{-2(1)}{1}\right) = 4$

۷

$y = -x^2 - 1$

$y' = -2x$



$+2\left(+\sqrt{-1-d}\right)(+2)\left(\sqrt{-1-d}\right) = +1$

$-d-1 = \frac{5}{4}$

$d = -\frac{9}{4} \rightsquigarrow$ عرض $= \frac{5}{4}$

۸

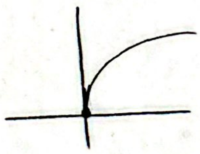
$f(x) = 2\sqrt{x}\,(4x^2+3)$

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

$= \frac{4x^2+3+16x^2}{\sqrt{x}}$

x		0	
f'	//////		+
f	//////	0	↗

min
نسبی



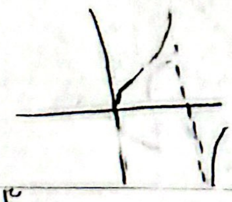
$+\infty$

۹

$f'(x) = \frac{\frac{-2x^2+x+1}{2\sqrt{x}} - \frac{(-4x+1)2x}{2\sqrt{x}}}{(-2x^2+x+1)^2} = \frac{6x^2-x+1}{2\sqrt{x}\,(\quad)^2}$

$-\frac{1}{2}$, 1, 0

x		0		1	
f'	//////		+	‖	+
f	//////	0	↗	‖	↗



۱۰

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

$\lim_{x\to \frac{\sqrt{5}}{2}^-} \frac{\left(\frac{1}{\sqrt{x^2-1}}(2)\right)^3 - f(g)}{x - \frac{\sqrt{5}}{2}} \xrightarrow{\text{hop}} \lim_{x\to\frac{\sqrt{5}}{2}} 3\left(\frac{2}{\sqrt{x^2-1}}\right)^2\left(\frac{2\times 2x}{2\sqrt{x^2-1}}\right) =$

$-\frac{3\times(2\times 2)(2\times 2)(2\times 2\times\frac{\sqrt{5}}{2})}{2\times 16\sqrt{5}} = -6$