پرهام ستاری - دوازدهم تجربی B　　　　بنام خدا　　　　تکلیف شماره ۲۷

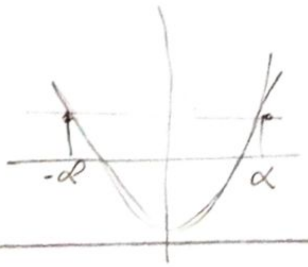
۱)

$$\lim \frac{f(x)-f(0)}{x-0} = 0 \rightarrow b = 0$$

$$f'(x) = 3 \times 2 \times \cos^2(2x) \times (-\sin 2x) + 2ax \rightarrow f(0) = 0 \rightarrow f'(0) = 0$$

$$\lim \frac{f'(x)-f'(0)}{x-0} = 2 \rightarrow f''(0) = 2 \rightarrow a = 1 \rightarrow a+b = 1$$

۲)



$$f'(\alpha) \times f'(-\alpha) = -1 ,\ f(x) = x^2+1 \rightarrow f'(x) = 2x$$

$$-4\alpha^2 = -1 \rightarrow \alpha = \pm\frac{1}{2} \ \Big/\ f(\alpha) = \pm\frac{1}{2} \rightarrow \frac{1}{4} - 1 = -\frac{3}{4} \times 2 = -\frac{3}{2}$$

۳)

$$m = \frac{9-(-12)}{3a-(-4a)} = 6 \rightarrow y - 9 = 6(x - 3a) \ \Big/\ y = 6x - 9 = \frac{a}{2x-1} \rightarrow 12x^2 - 24x + 9 - a = 0$$

$$\xrightarrow{\Delta = 0} (-24)^2 - 4(12)(9-a) = 0 \rightarrow 48a = -144 \rightarrow a = -3 \rightarrow f(a) = -\frac{1}{3}$$

۴) نقطه ثابت (۱ ، ۰)

$$2x + b = \frac{x+a}{ax+1} ,\ \frac{(ax+1) - a(x+a)}{(ax+1)^2} = 2 \rightarrow \frac{1-a^2}{(a+1)^2} = 2 \rightarrow a \rightarrow 1 ,\ -\frac{1}{3}$$

$$y = \frac{x - \frac{1}{3}}{-\frac{1}{3}x + 1} \rightarrow y = 1 \rightarrow 2 + b = 1 \rightarrow b = -1 \rightarrow a - b = -\frac{1}{3} + 1 = \frac{2}{3}$$

۵)

$$f(x) = g(x) \Rightarrow \sin x + \frac{1}{2}\cos x - \frac{3}{4}\sin x \rightarrow \frac{1}{4}\sin x = \frac{1}{2}\cos x \rightarrow \sin x = \cos x \Rightarrow x = \frac{\pi}{4}$$

$$f'(x) = \cos x - \frac{1}{2}\sin x \rightarrow f(x) = \frac{\pi}{4} \rightarrow f'(\tfrac{\pi}{4}) = \frac{\sqrt{2}}{2} - \frac{\sqrt{2}}{4} = \frac{\sqrt{2}}{4} \rightarrow y - \frac{3\sqrt{2}}{4} = \frac{\sqrt{2}}{4}(x - \frac{\pi}{4}) \quad (\frac{\pi}{4}, \frac{3\sqrt{2}}{4})$$

$$y = 0 \rightarrow x = \frac{\pi}{4} - 3$$

۱۰٪ همسازی

۴۶

(۲)

$f'(x)=6x^2-6x-12=0 \to x^2-2=0 \;<\; x=-1,\; x=+1$ $m_{AB}=\frac{-19-8}{2-(-4)}$

$6x^2-6x-12=-9 \to 6x^2-6x-3=0 \quad D>0$

(۷

$y=kx^3+(x+1)x^2 \to y'=6kx+2k+2=0$

$k\left(\frac{-(x+1)}{3k}\right)^3+(x+1)\left(-\frac{(kx)}{2k}\right)^2<0 \to \frac{-(x+1)^3+3(k+1)^3}{27k^2}<0$

$\frac{2(x+1)^2}{27k^2}<0$

	-1		0	
−	0	+	0	+

$6kx=-2k-2 \to x=\frac{(-kx)}{3k}>0$

$\frac{k+1}{3k}<0$

	-1		0	
+		−		+

$k\in(0,+\infty)$ هیچ مقدار

(۸

$y=x^3+ax^2+bx-1 \to y'=3x^2+2ax+b \to y''=6x+2a \xrightarrow{y''=0} 6x+2a=0$

$3x+a=0 \to x=-\frac{a}{3} \xrightarrow{-\frac{a}{3}=-1} a=3 \quad y=x^3+3x^2+bx-1$

$f(-1)=-1 \to -1+3-b-1=-4 \to b=5 \quad \frac{a}{b}=\frac{3}{5}$

(۹

$f(x)=x^3+ax^2+bx+c \to f(0)=4 \to c=4 \to f'(x)=3x^2+2ax+b \to f'(0)=0 \to b=0$

$f(x)=x^3+ax^2+4 \to f'(x)=3x^2+2ax$

$x(3x+2a) \to x=0,\; x=-\frac{2a}{3}$ min نسبی $f(-\frac{2a}{3})=0 \to (-\frac{2a}{3})^3+a(-\frac{2a}{3})^2+4=0$

$a=-3$

$-\frac{2a}{3}=2$

(۱۰

$f(x)=x^4-6x^2+5 \to f'(x)=4x^3-12x=0 \to x^3-3x=0 \quad x(x^2-3)=0$

$f''(x)=12x^2-12=0$

$x^2-1=0 \to x=\pm1$

$C(1,0),\; D(-1,0) \quad m_D=0,\; m_{AB}=0$

x		$-\sqrt{3}$		0		$\sqrt{3}$	
$f'(x)$	−	0	+	0	−	0	+
$f(x)$	↘	-4 $A\|\begin{matrix}-\sqrt{3}\\-4\end{matrix}$	↗		↘	-4 $B\|\begin{matrix}\sqrt{3}\\-4\end{matrix}$	↗