نام و نام خانوادگی ...... محمد کاکی ...... ۱۵/۷۵ پاسخنامه تشریحی تکلیف شماره ۲۳ کلاس ۱۲A

$g'(x)=(2\cot x.\tan x-\sqrt{2}\sin x)\,f'(\tan^2 x+\sqrt{2}\cos x)\xRightarrow{x=\frac{\pi}{4}}$ $(2+1)f'(2)=\sqrt{3}\Rightarrow 3f'(2)=\sqrt{3}\rightarrow f'(2)=\frac{\sqrt{3}}{3}$ ۱/۵	۱
$\frac{(2+\cos x)(4-2\cos x+\cos^2 x)}{(2+\cos x)(2-\cos x)}\Rightarrow\frac{4-2\cos x+\cos^2 x}{2-\cos x}-\frac{2(2)}{2-\cos x}\Rightarrow$ $\frac{-2\cos x+\cos^2 x}{2-\cos x}\Rightarrow\frac{-\cos x(2-\cos x)}{2-\cos x}\Rightarrow-\cos x=f-2g\Rightarrow(f-2g)'\Rightarrow$ $+\sin x\Rightarrow x=\frac{7\pi}{6}=\frac{-1}{2}$ ✓ ۲	۲
$2\sqrt{6}=2\alpha\Rightarrow\alpha=\sqrt{6}\Rightarrow$ شیب $\Rightarrow(4x-3)\sqrt{ax}\Rightarrow f'=4\sqrt{ax}=0\Rightarrow$ $x=\frac{3}{4}\Rightarrow 4\sqrt{\frac{3}{4}a}=\sqrt{6}\Rightarrow a=\frac{1}{2}$ ✓ ۲	۳
$y=-ax+2\Rightarrow f(4)+f'(4)\Rightarrow(-4a+2)+(-a)\Rightarrow-5a+2=-1$ $a=\frac{3}{5}$ $f'(4)=-a=-\frac{3}{5}=-0/6$ ۱/۷۵	۴
$y=\frac{x+5}{7}\Rightarrow\frac{(a)(3x+1)-(3)(ax-1)}{(3x+1)^2}=\frac{1}{7}\xRightarrow{\text{ساده کردن}}7a=3x+22\Rightarrow$ $\frac{ax-1}{3x+1}=\frac{x+5}{7}\Rightarrow 7ax-7=3x^2+x+15x+5\Rightarrow(7a=3x+22)\Rightarrow$ $12-6x=0\Rightarrow x=2\Rightarrow 3x+22\Rightarrow 6+22=28=7a\Rightarrow a=4$ ✓ ۲	۵

$f' \Rightarrow 3x^2 + a \Rightarrow x=2 \rightarrow 12 + a = 0 \Rightarrow \underline{a=-12}$ / $8 + \underset{-24}{2a} - b \Rightarrow \underline{b=-16}$

$b - a = -16 - (-12) = \underline{-4}$

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$\lim_{x\to 0} \dfrac{\sin^n(x^2) \times n\sin^{n-1}(x^2) \times \cos(x^2) \times (2x)}{(2\sin^2\frac{x}{2})^m} \xrightarrow{\text{هم‌ارزی}} \lim_{x\to 0} \dfrac{(x^2)^n n (x^2)^{n-1} \times 2x}{(2(\frac{x}{2})^2)^m} =$

$\lim_{x\to 0} \dfrac{2nx^{2n+2n-2+1}}{(\frac{x^2}{2})^m} = \lim_{x\to 0} \dfrac{2nx^{4n-1}}{\frac{1}{2^m}x^{2m}} = \lim_{x\to 0} 2^{m+1} n x^{4n-2m-1}$ ⟶ حاصل حد عدد غیر متناهی غیرصفر ← توان‌ها برابرند ۷

$\begin{cases} 4n - 2m - 1 = 0 \longrightarrow n = \frac{2m+1}{4} \\ 2^{m+1} n = 32\sqrt{2} \end{cases} \longrightarrow 2^{m+1} \times \dfrac{2m+1}{4} = 32\sqrt{2} \rightarrow (2m+1)2^{m+1} = 2^7\sqrt{2} \longrightarrow m = \frac{7}{2}$, $n = 2$ $\quad 2m+n = 9$

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$\dfrac{\sqrt{x}+1}{\sqrt{x}-1} \xRightarrow{\text{مشتق ۱}} (\frac{1}{2\sqrt{x}})(\sqrt{x}-1) - (\frac{1}{2\sqrt{x}})(\sqrt{x}+1) \Rightarrow \dfrac{-1}{(\sqrt{x})(\sqrt{x}-1)^2} \xRightarrow{\text{مشتق ۲}}$

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$\dfrac{3\sqrt{x}-1}{2x\sqrt{x}(\sqrt{x}-1)^3} \xRightarrow{x=2} \dfrac{3\sqrt{2}-1}{4\sqrt{2}(\sqrt{2}-1)^3} \xRightarrow[(\sqrt{2}+1)^3]{\times(\sqrt{2}+1)^3} \dfrac{(7+5\sqrt{2})(3\sqrt{2}-1)}{4\sqrt{2}} \Rightarrow$ ۸

$(7+5\sqrt{2})$

$f(x) = \dfrac{\sqrt{x}+1}{\sqrt{x}-1} \rightarrow \sqrt{x}y - y = \sqrt{x}+1 \longrightarrow \sqrt{x}(y-1) = y+1 \rightarrow \sqrt{x} = \dfrac{y+1}{y-1} \rightarrow x = (\dfrac{y+1}{y-1})^2 \longrightarrow y = (\dfrac{x+1}{x-1})^2$

$\dfrac{23+14\sqrt{2}}{4\sqrt{2}}$

$f^{-1}(x) = (\dfrac{x+1}{x-1})^2 \rightarrow (f^{-1})' = 2(\dfrac{x+1}{x-1}) \times \dfrac{-2}{(x-1)^2} \longrightarrow (f^{-1}(3))' = 2 \times 4 \times (-2) = -12$

$0 \Rightarrow 1$ / $-1 \Rightarrow (8)(-a+1) = 12 \Rightarrow a = \dfrac{-1}{2} \Rightarrow$

$\bullet\ -2a = 1 \Rightarrow 3(x^2+1)^2(2x)(ax+1) + (a)(x^2+1)^3 \xRightarrow{x=1} 12 - 4 = \underline{8}$ ۹

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$\dfrac{\dfrac{y_2-y_1}{x_2-x_1}}{\dfrac{y'_2-y'_1}{x_2-x_1}} \Rightarrow \dfrac{y_2-y_1}{y'_2-y'_1} \Rightarrow \dfrac{1}{-1} = \underline{-1}$ ۱۰

$\sin x\cos 2x \nearrow 0,\ \searrow -1$ $\quad \Big\{ \sin^2 x - \cos^2 x \nearrow 0,\ \searrow 1$

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