نام و نام خانوادگی امیرعلی تنهایی راد .... پاسخنامه تشریحی تکلیف شماره ۴۳ ...... کلاس دوازدهم ریاضی B ....

$$g'(x) = f'(\tan^2 x + \sqrt{2}\cos x)\big((2\tan x)(1+\tan^2 x)\big)(-\sqrt{2}\sin x)$$

$$g'\left(\frac{\pi}{4}\right) = f'\left(1^2 + \sqrt{2}\times\frac{\sqrt{2}}{2}\right)\big((2\times 1)(1+1)\big)\left(-\sqrt{2}\times\frac{\sqrt{2}}{2}\right) \Rightarrow$$ ۱

$$g'\left(\frac{\pi}{4}\right) = f'(2)\times 4\times -1 \rightarrow \sqrt{3} = f'(2)\times -4 \rightarrow f'(2) = \frac{-\sqrt{3}}{4}$$

$$f(x) = \frac{(2+\cos x)(4+\cos^2 x-2\cos x)}{(2-\cos x)(2+\cos x)} = \frac{\cos^2 x - 2\cos x + 4}{2-\cos x} \qquad 2g(x) = \frac{4}{2-\cos x}$$

$$f'\left(\frac{7\pi}{6}\right) - 2g'\left(\frac{7\pi}{6}\right) = (f-2g)'\left(\frac{7\pi}{6}\right) \qquad f(x)-2g(x) = \frac{\cos^2 x - 2\cos x}{2-\cos x} = \frac{\cos x(\cos x - 2)}{2-\cos x} =$$ ۲

$$-\cos x \longrightarrow (f-2g)' = \sin x \longrightarrow (f-2g)'\left(\frac{7\pi}{6}\right) = \sin\frac{7\pi}{6} = \frac{-1}{2}$$

$$f(x) = \begin{cases} (4x-3)(\sqrt{ax}) & x > \frac{3}{4} \\ (-4x+3)(\sqrt{ax}) & x < \frac{3}{4} \end{cases} \qquad f'(x) = \begin{cases} (4\sqrt{ax}) + \left(\frac{a}{2\sqrt{ax}}\times(4x-3)\right) & \frac{3}{4} \\ (-4\sqrt{ax}) + \left(\frac{a}{2\sqrt{ax}}\times(-4x+3)\right) & x < \frac{3}{4} \end{cases}$$ ۳

$$\longrightarrow 8\sqrt{ax} + \frac{8ax-6a}{2\sqrt{ax}} = \frac{\overset{24ax-6a}{\cancel{16ax+8ax-6a}}}{2\sqrt{ax}} = \frac{6a(4x-1)}{2\sqrt{ax}} = \frac{6a(2)}{2\sqrt{a\times\frac{3}{4}}} = \frac{12a}{\sqrt{3a}}$$

$$\frac{12a}{\sqrt{3a}} = 2\sqrt{6} \rightarrow \frac{6a}{\sqrt{3a}} = \sqrt{6} \rightarrow 6a = \sqrt{18a} \rightarrow 36a^2 = 18a \rightarrow 2a^2 = a \rightarrow 2a = 1 \rightarrow a = \frac{1}{2}$$

$$y = -ax+2 \longrightarrow f'(4) = -a \qquad f(4) = -4a+2$$

$$f(4)+f'(4) = -5a+2 = -1 \rightarrow 5a = 3 \rightarrow a = \frac{3}{5}$$ ۴

$$f'(4) = -a = -\frac{3}{5}$$

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$f(2)=0 \longrightarrow 8+2a-b=0$

$f'(x)=3x^2+a \longrightarrow f'(2)=0 \longrightarrow 12+a=0 \longrightarrow a=-12$

$\Longrightarrow 8+2(-12)-b=0 \longrightarrow b=-16$ ۶

$b-a=-16-(-12)=-4$

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

$$f'(2)=\frac{\frac{-1}{\sqrt{2}}}{(\sqrt{2}-1)^2}=\frac{\frac{-\sqrt{2}}{2}}{3-2\sqrt{2}}\times\frac{3+2\sqrt{2}}{3+2\sqrt{2}}=\frac{\frac{-3\sqrt{2}}{2}-2}{1}=\frac{-3\sqrt{2}}{2}-\frac{4}{2}$$ ۸

$$=\frac{-3\sqrt{2}-4}{2}\xrightarrow{\text{معکوس}}\frac{-2}{3\sqrt{2}+4}\times\frac{3\sqrt{2}-4}{3\sqrt{2}-4}=\frac{-6\sqrt{2}+8}{2}=-3\sqrt{2}+4$$

$f(0)=(0+1)^3(1)=1$

$f(-1)=(2)^3(-a+1)=-8a+8 \longrightarrow \dfrac{1-(-8a+8)}{1}=\dfrac{8a-7}{1}=-11$

$8a=-4 \to a=\dfrac{-1}{2} \longrightarrow -2a=1$ ۹

$f'(x)=3(x^2+1)^2(2x)(ax+1)+a(x^2+1)^3 \Rightarrow f'(1)=\left(3\times4\times2\times\frac{1}{2}\right)+\left(\frac{-1}{2}\times8\right)$

$=12+(-4)=8$

$y=\sin x\cos 2x \quad \xrightarrow{x=\frac{\pi}{4}} y=\frac{\sqrt{2}}{2}\times0=0$

$\xrightarrow{x=\frac{\pi}{2}} y=1\times-1=-1 \longrightarrow \dfrac{-1}{\frac{\pi}{2}-\frac{\pi}{4}}$

$y=(\sin^2x-\cos^2x)(\cancel{\sin^2x+\cos^2x})^{1}=-\cos 2x \quad \xrightarrow{x=\frac{\pi}{4}} y=0$ ۱۰

$\xrightarrow{x=\frac{\pi}{2}} y=1 \longrightarrow \dfrac{1}{\frac{\pi}{2}-\frac{\pi}{4}}$

$$\Rightarrow \frac{\frac{-1}{\cancel{\frac{\pi}{2}-\frac{\pi}{4}}}}{\frac{1}{\cancel{\frac{\pi}{2}-\frac{\pi}{4}}}}=-1$$