نام و نام خانوادگی ..... پاسخنامه تشریحی تکلیف شماره ..... کلاس ..... دوازدهم پسر A

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

$g'(\frac{\pi}{4}) = f'(1+\frac{\sqrt{2}}{\sqrt{2}}) \times (2\times 1\times(1+1) - \frac{\sqrt{2}}{\sqrt{2}})$

$\sqrt{3} = f'(2)\times(3) \longrightarrow f'(2) = \sqrt{3}$

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$f(x) = \frac{(2+\cos x)(\cos^2 x + 3 - 2\cos x)}{(2-\cos x)(2+\cos x)} = \frac{\cos^2 x + 3 - 2\cos x}{2-\cos x}$

$f(x) = (2-\cos x) + \frac{+2\cos x}{2-\cos x} \longrightarrow f(x) = (2-\cos x) + \cos x \; g(x)$

$f'(x) = +\sin x + \cos(x)\, g'x - \sin(x)\, g(x) \longrightarrow f'(\frac{7\pi}{4}) = -\frac{1}{2}(1-\frac{\sqrt{2}}{2})\, g'(\frac{7\pi}{4})$

$f'(\frac{7\pi}{4}) - 2g'(\frac{7\pi}{4}) = -\frac{1}{2} - (\frac{2+\sqrt{2}}{2})\, g'(\frac{7\pi}{4}) = -\frac{1}{2} - (\frac{2+\sqrt{2}}{2})(\frac{-1}{(2-\frac{\sqrt{2}}{2})^2})$

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$f(x) = |4x-2|\sqrt{ax}$

$f'_+(\frac{1}{4}) = (4x-2)\sqrt{ax} \longrightarrow 2\sqrt{\frac{3}{4}a} \longrightarrow 8\sqrt{\frac{3}{4}a} = 2\sqrt{6}$

$f'_-(\frac{1}{4}) = -(4x-2)\sqrt{ax} \longrightarrow -2\sqrt{\frac{3}{4}a} \quad 4\sqrt{\frac{3}{4}a} = \sqrt{6}$

$\sqrt{16\times\frac{3}{4}a} = \sqrt{6} \rightarrow 12a = 6 \quad \boxed{a=\frac{1}{2}}$

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

$f(1) + f'(1) = -5a + 2 = -1 \qquad 2a = 3$

$a = \frac{3}{2} \qquad f'(1) = -\frac{3}{2}$

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$y = \frac{x}{7} + \frac{5}{7} \qquad f'(x) = \frac{1}{7} \qquad f(x) = \frac{x}{7} + \frac{5}{7}$

$f(x) = \frac{ax-1}{3x+1} \qquad \frac{a+3}{(3x+1)^2} = \frac{1}{7} \qquad \frac{7(ax-1)}{3x+1} = x+5$

$f'(x) = \frac{a+3}{(3x+1)^2} \qquad a = \frac{(3x+1)^2}{7} - 3 \qquad 7ax - 7 = 3x^2 + 14x + 5$

$x = 4 \;,\; a = 4$

$f(2)=0 \qquad f'(2)=0 \qquad b=-16 \qquad a=-12$

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

$f(x)=x^3+ax-b \longrightarrow 8-24-b=0 \longrightarrow b=-16$

$b-a=-16+12=-4$

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$$\lim_{x\to 0}\frac{f(x)\,f'(x)}{(1-\cos x)^m}=2\sqrt{2} \longrightarrow \frac{x^{2n}\times n\times x^{2n-2}\times\left(1-\frac{x^2}{2}\right)\times 2x}{\left(1-\left(1-\frac{x^2}{2}\right)\right)^m}=\frac{2n\,x^{4n-1}\left(1-\frac{x^2}{2}\right)\times 2^m}{x^{2m}}$$

$\sin(x^2)\sim x^2$

$\cos(x^2)\sim 1-\frac{x^4}{2}$

$f(x)=\sin^n(x^2)\sim x^{2n}$

$2m+n=2\left(\frac{7}{2}\right)+2=9$

$f'(x)=n\sin^{n-1}(x^2)\cos(x^2).2x$

$m=2n-\frac{1}{2}$

$2n2^m=2^{\frac{11}{2}}$

$n=2 \qquad m=\frac{7}{2}$

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

$f(9)=2$

$f^{-1}(2)=9$

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

$f'(9)=\frac{-2}{4}=-\frac{1}{2}$

$f^{-1}(2)=-2$

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$$\frac{f(0)-f(-1)}{0-(-1)}=\frac{1-(2)^3(1-a)}{1}=-11 \longrightarrow -11=1-8+8a$$

$-4=8a$

$-\frac{1}{2}=a$

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

$f'(1)=3\times 2x(x^2+1)^2\left(1-\frac{1}{2}x\right)-\frac{1}{2}(x^2+1)^3=12-4=8$

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$y=\sin x\cos 2x \longrightarrow$

$y=(\sin^2+\cos^2)(\sin^2-\cos^2)=\sin^2-\cos^2=-\cos 2x$

$$\frac{\left(\sin\left(\frac{\pi}{2}\right)\cos(\pi)\right)-\left(\sin\left(\frac{\pi}{4}\right)\cos\frac{\pi}{2}\right)}{4\pi}\times\frac{4\pi}{-\cos\pi+\cos\frac{\pi}{2}}=\frac{1}{-1}=-1$$

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