كاسب الغری بصره

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

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

$$\sqrt{3} = f'(2)\times(3) \Rightarrow f'(2) = \sqrt{3}$$ (1

$$f(x) = (2-\cos x) + \cos x\, g(x)$$ (2

$$\Rightarrow f'(x) = +\sin x + \cos x\, g'(x) - \sin x\, g'(x)$$

$$\rightarrow f'\left(\frac{7\pi}{6}\right) = -\frac{1}{2}\left(\frac{1-\sqrt{3}}{2}\right) g'\left(\frac{7\pi}{6}\right)$$

$$f'\left(\frac{7\pi}{6}\right) - 2g'\left(\frac{7\pi}{6}\right) = -\frac{1}{2} - \left(\frac{3-\sqrt{3}}{2}\right) g'\left(\frac{7\pi}{6}\right)$$

$$= -\frac{1}{2} - \left(\frac{3-\sqrt{3}}{2}\right)\left(\frac{-1}{\left(2-\frac{\sqrt{3}}{2}\right)^2}\right)$$

$$f(x) = |4x-3|\, a\sqrt{x} \Rightarrow 8\sqrt{\frac{3}{4}a} = 2\sqrt{6}$$ (3

$$f'\left(\frac{3}{4}\right) = (4x-3)\sqrt{a\,x} \Rightarrow 4\sqrt{3\,a} = \sqrt{6}$$

$$f'\left(\frac{3}{4}\right) = -(4x-3)\sqrt{a\,x}$$

$$\sqrt{144\,\frac{3}{4}a} = \sqrt{6} \qquad 32a = 9 \Rightarrow a = \frac{1}{2}$$

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

$$f(4) + f'(4) = -5a+2 = -1 \qquad 5a = 3$$ (4

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

$g = \frac{x}{۷} + \frac{۶}{۷} \qquad f'(x) = \frac{۱}{۷} \qquad f(x = \frac{x}{۷} + \frac{۶}{۷}$

$f(x) = \frac{ax - ۱}{۳x + ۱} \qquad \frac{a + ۳}{(۳x+۱)^۲} = \frac{۱}{۷} \qquad \frac{۷(ax-۱)}{۳x+۱} = x - ۶$

$f'(x) = \frac{a + ۳}{(۳x + ۱)^۲} \qquad a = \frac{(۳x+۱)^۲}{۷} - ۳$ (۵

$۷ax - ۷ = ۳x^۲ + ۱۶x + ۶ \qquad x = ۲ \qquad a = ۴$

$f(۲) = ۰ \qquad f'(۲) = ۰ \qquad b = -۱۶ \qquad a = -۱۲$

$f'(x) = ۳x^۲ + a \longrightarrow a = -۱۲$ (۶

$f(x) = x^۳ + ax + b \longrightarrow ۸ - ۲۴ + b = ۰ \longrightarrow b = -۱۶$

$b - a = -۱۶ + ۱۲ = -۴$

$\lim_{x \to ۰} \frac{f(x)\, f'(x)}{(۱ - \cos x)^m} = ۴۲\sqrt{۲} \longrightarrow \frac{x^{۲n} \times n\, x^{۲n-۲} \times (۱ - \frac{x^۲}{۲}) \times ۴}{\left(۱ - (۱ - \frac{x^۲}{۲})\right)^m}$ (۷

$m = ۲n - \frac{۱}{۲}$

$۲n۲^m = ۲ \Rightarrow m = \frac{۷}{۲} \qquad n = ۲$

$۲m + n = ۲(\frac{۷}{۲}) + ۲ = ۹$

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

$f(a) = 2$

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

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

(۸

$$f'(3) = \frac{-2}{4} = \frac{-1}{2}$$

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

$$\frac{f(0) - f(-1)}{0-(-1)} = \frac{1-(2)^3(1-a)}{1} \Rightarrow$$

(۹

$$\left.\begin{array}{l} 8a = -4 \\ a = \frac{-1}{2} \end{array}\right\} \quad f'(1) = 3a\,2x\,(x^2+1)^2\left(1-\frac{1}{2}x\right)$$

$$-\frac{1}{2}(x^2+1)^3 = 12 - 4 = 8$$

$y = \sin x \cos 2x$

۱۰

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

$$\frac{\left(\sin\frac{\pi}{4}\cdot \cos 2x\right) - \cancel{\left(\sin\left(\frac{\pi}{4}\right)\cos\frac{\pi}{4}\right)}}{4x} = \frac{1}{-1} = -1$$

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