

Wika

$$g(u) = f(\tan u + \sqrt{r} \cos u) \quad g'\left(\frac{\pi}{\varepsilon}\right) = \sqrt{r} \quad \begin{array}{l} \text{Lip 2 Lip} \\ f(r) = ? \end{array}$$

$$(\tan u)' = \frac{r \tan u}{\cos^2 u} \quad \& \quad (\sqrt{r} \cos u)' = -\sqrt{r} \sin u$$

$$g\left(\frac{\pi}{\varepsilon}\right) = f(1+1) \rightarrow g\left(\frac{\pi}{\varepsilon}\right) = f(r) \rightarrow f'\left(\frac{\pi}{\varepsilon}\right) = \frac{r \tan \frac{\pi}{\varepsilon}}{\cos^2 \frac{\pi}{\varepsilon}} - \sqrt{r} \sin \frac{\pi}{\varepsilon} \rightarrow$$

$$\rightarrow f'\left(\frac{\pi}{\varepsilon}\right) \cdot \varepsilon - 1 = r \rightarrow g'\left(\frac{\pi}{\varepsilon}\right) = r f(r) \quad \begin{array}{l} \text{Gut 2b} \\ f(r) = \sqrt{r} \end{array}$$

y

$$f(u) = \frac{1 + \cos u}{\varepsilon - \cos u}$$

$$g(u) = \frac{r}{r - \cos u}$$

$$(f - g)' \left(\frac{\sqrt{r}}{g} \right) \rightarrow \frac{1 + \cos u}{\varepsilon - \cos u} - \frac{r}{r - \cos u} = \frac{1 + \cos u - 1 - \varepsilon \cos u}{\varepsilon - \cos u}$$

$$\frac{(f - g)'}{\varepsilon - \cos u} = -\cos u \frac{(f - g)'}{\sin u} \rightarrow \sin u \rightarrow$$

$$\rightarrow \sin \frac{\sqrt{r}}{g} = \left[\frac{-1}{r} \right] \checkmark$$

$$f(u) = |\varepsilon u - r| \sqrt{a u}$$

$$u = \frac{r^+}{\varepsilon} \rightarrow (\varepsilon u - r) \sqrt{a u} \frac{f'(u)}{\varepsilon \sqrt{a u}} \rightarrow \varepsilon \sqrt{a u} + \varepsilon \sqrt{a u} = r \sqrt{a} \rightarrow$$

$$u = \frac{r^-}{\varepsilon} \rightarrow (r - \varepsilon u) \sqrt{a u} \frac{f'(u)}{-\varepsilon \sqrt{a u}}$$

$$\rightarrow 1 \sqrt{a u} = r \sqrt{a} \xrightarrow{u = \frac{r}{\varepsilon}} 1 \sqrt{\frac{r}{\varepsilon} a} = r \sqrt{a} \rightarrow a = \frac{1}{r} \checkmark$$

$$y + a u = r \quad f(\varepsilon), f'(\varepsilon) = 1$$

$$f(\varepsilon) \Rightarrow y = r - a u \rightarrow f(\varepsilon) = r - \varepsilon a, f'(\varepsilon) = -a$$

$$r - \varepsilon a - a = -1 \rightarrow -\omega a = -r \rightarrow a = \frac{r}{\omega} \rightarrow f'(\varepsilon) = -\frac{r}{\omega} \checkmark$$

$$V y - n = \omega \quad \xrightarrow{\text{multiplying}}, y = \frac{an-1}{\mu_{n+1}}$$

$$y = \frac{n}{V} + \frac{\omega}{V} \rightarrow m = \frac{1}{V}$$

$$y = \frac{an-1}{\mu_{n+1}} \xrightarrow{\text{putting}}, \frac{a(\mu_{n+1}) - (an-1) \times \mu}{(\mu_{n+1})^2} = \frac{a+\mu}{(\mu_{n+1})^2}$$

$$\frac{a+\mu}{(\mu_{n+1})^2} = \frac{1}{V} \rightarrow V(a+\mu) = (\mu_{n+1})^2 \rightarrow Va = 9m^2 + 4m - 10$$

$$\text{So} \rightarrow \frac{an-1}{\mu_{n+1}} = \frac{n+\omega}{V} \rightarrow V(an-1) = (n+\omega)(\mu_{n+1})$$

$$Van-1 = \mu n^2 + 14n + 6 \rightarrow Va = \frac{\mu n^2 + 14n + 10}{n}$$

$$\rightarrow 9m^2 + 4m - 10 = \frac{\mu n^2 + 14n + 10}{n} \rightarrow 9m^2 + \mu n^2 - \mu 4m - 10\mu = 0$$

$$\div \mu \rightarrow \mu n^2 + n^2 - 10n - 10 = 0 \rightarrow (n^2 - 10)(\mu_{n+1}) = 0$$

$$n = \pm 10, -\frac{1}{\mu} \rightarrow \text{not possible}$$

$$(\mu_{n+1})^2 = V(a+\mu) \rightarrow \text{at } n=1 \quad 10 = Va + \mu \rightarrow a = 10$$

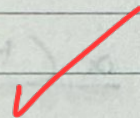
$$f(x) = x^m + ax - b$$

-4

$$f(1) = 0 \rightarrow 1 + a - b = 0 \xrightarrow{a=12} -14 - b = 0 \rightarrow b = -14$$

$$f'(1) = 0 \rightarrow m + a = 0 \rightarrow 1 + a = 0 \rightarrow a = -1$$

$$b - a = -14 - (-1) = -13$$



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$$f(x) = \sin^n(x) \quad \lim_{x \rightarrow 0} \frac{f(x) f'(x)}{(1 - \cos x)^m} = \frac{1}{\sqrt{e}}$$

1/√e

$$f(x) x^m \xrightarrow{f'(x)} m x^{m-1}$$

$$\text{L'Hôpital} \rightarrow \left(\frac{x^m}{1-x}\right)^m$$

$$\frac{x^m \times m x^{m-1}}{\left(\frac{x^m}{1-x}\right)^m} = m x^m \times (1-x)^m \rightarrow x \rightarrow 0 \rightarrow -m + \epsilon n - 1 = 0$$

$$\rightarrow m = \frac{1}{2} \quad n = \frac{1}{2} \quad m+n = 1$$

$$f(n) = \frac{\sqrt{n} + 1}{\sqrt{n} - 1} \rightarrow f^{-1}(r) \Rightarrow f(n) = r \rightarrow$$

1

1

$$\rightarrow \frac{\sqrt{n} + 1}{\sqrt{n} - 1} = r \rightarrow \sqrt{n} + 1 = r\sqrt{n} - r \rightarrow \sqrt{n} = r \rightarrow n = 9$$

$$f(n) = \frac{\sqrt{n} + 1}{\sqrt{n} - 1} \rightarrow \sqrt{xy} - y = \sqrt{x} + 1 \rightarrow \sqrt{x}(y-1) = y+1 \rightarrow \sqrt{x} = \frac{y+1}{y-1} \rightarrow x = \left(\frac{y+1}{y-1}\right)^2 \rightarrow y = \left(\frac{x+1}{x-1}\right)^2$$

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

$$\frac{\frac{1}{\sqrt{n}} - \frac{2}{\sqrt{n}}}{(\sqrt{n}-1)^2} \rightarrow f'(a) = -\frac{1}{12} \rightarrow (f^{-1}(r))' = r \cdot f'(r) = -12$$

$$f(n) = \left(\frac{n+1}{n-1}\right)^2 \rightarrow (f^{-1})' = r \left(\frac{n+1}{n-1}\right)^{-2} \cdot \frac{-2}{(n-1)^2}$$

$$f(n) = (n^2 + 1)^n (n+1) \quad [-1, 0]$$

4

$$\frac{f(0) - f(-1)}{1} = 1 - \ln(-a+1) = \ln a - \ln(-1) = -1$$

1/0

$$\ln a = -\varepsilon \rightarrow a = -\frac{1}{\varepsilon} \rightarrow y = -2a \rightarrow n = 1$$

$$f'(n) = r(n)(n^2+1)^r (n+1) + a(n^2+1)^n \cdot \frac{n-1}{n^2} \rightarrow r(1)(1+1)^r \left(\frac{1}{2}+1\right) + \frac{1}{2}(1+1)^r = 1$$

$$f'(n) = r(n^2+1)^r (n) \left(\frac{1}{n}\right) \rightarrow r(1)(1) \left(\frac{1}{1}\right) = \left(\frac{1}{1}\right)$$

$$f(n) \\ y = \sin n \cos n$$

$$\left[\frac{\pi}{2}, \frac{\pi}{2} \right]$$

-10

$$h(n), y = \sin^2 n - \cos^2 n \rightarrow (\sin^2 n \cos^2 n) (\sin^2 n + \cos^2 n)$$

$$\frac{f\left(\frac{\pi}{2}\right) - f\left(\frac{\pi}{2}\right)}{h\left(\frac{\pi}{2}\right) - h\left(\frac{\pi}{2}\right)} = \frac{-1}{1} = -1$$

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