Notes 10-10-2024

$h(x) = f(x)^{g(x)}$

$\boxed{x} \to f(x)$, $\quad \boxed{x^2+1} \to g(x)$

Π.χ.

$$\theta = e^{\ln \theta}$$

$$h(x) = x^{x^2+1} = e^{\ln \boxed{x^{x^2+1}}} = e^{(x^2+1)\cdot \ln x}$$

$$h'(x) = \left[e^{(x^2+1)\cdot \ln x}\right]' = e^{(x^2+1)\cdot \ln x}\left[(x^2+1)\cdot \ln x\right]'$$

$$= x^{x^2+1}\left[2x\cdot \ln x + \frac{x^2+1}{x}\right]$$

Λογαριθμική παραγώγιση:

$$h(x) = x^{x^2+1} \Rightarrow \ln h(x) = \ln x^{x^2+1} \Rightarrow$$

$$\ln h(x) = (x^2+1)\cdot \ln x \xRightarrow{\text{παραγωγίζω}}$$

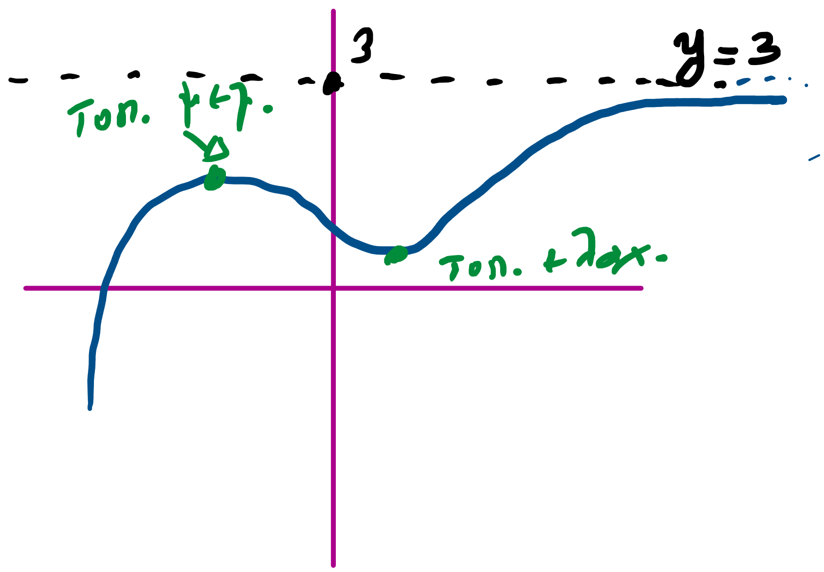
$$\left[\ln h(x)\right]' = \left[(x^2+1)\cdot \ln x\right]' \Rightarrow$$

$$\frac{1}{h(x)}\cdot h'(x) = 2x\cdot \ln x + \frac{x^2+1}{x}$$

ρυθμός μεταβολής της $h(x)$

$$\frac{h'(x)}{h(x)} = 2x \ln x + \frac{x^2+1}{x}$$

$$\boxed{h'(x) = \underbrace{h(x)}_{x^{x^2+1}}\cdot\left[2x \ln x + \frac{x^2+1}{x}\right]}$$



$$\sqrt[3]{x^2} + \frac{2(x-1)}{3\sqrt[3]{x}} = \frac{5x-2}{3\sqrt[3]{x}}$$

$$3\cdot\sqrt[3]{x}\cdot\sqrt[3]{x^2}$$

$$= 3\cdot\sqrt[3]{x^3} = 3\cdot x$$

$$\frac{\sqrt[3]{x^2}}{1}^{\overbrace{3\cdot\sqrt[3]{x}}} + \frac{2(x-1)}{3\cdot\sqrt[3]{x}}^{\overbrace{1}} = \frac{3\cdot x}{3\cdot\sqrt[3]{x}} + \frac{2(x-1)}{3\cdot\sqrt[3]{x}} =$$

$$\frac{5x-2}{3\cdot\sqrt[3]{x}}$$

$$\sqrt[\kappa]{x} \quad , \; x \geq 0$$

$$\sqrt[\kappa]{x} = \alpha \qquad\qquad \sqrt{-4} = \boxed{2i}$$

$$\sqrt[3]{x^2} \qquad\qquad i^2 = -1$$

φανταστική μονάδα.

$$\sqrt{9} = 3 \qquad \sqrt[3]{27} = 3$$

$$\sqrt[3]{-27} = -3$$

$$\sqrt[\kappa]{x} = \begin{cases} \sqrt[\kappa]{x} & , \; x \geq 0 \\ -\sqrt[\kappa]{-x} & , \; x < 0 \end{cases}$$

κ = περιττός

$$\sqrt[3]{-27} \rightsquigarrow -\sqrt[3]{27} = -3$$

$\sqrt[3]{x}$

$x<0 \rightarrow \ominus$

$x \geq 0 \rightarrow \oplus$

$A = (\underset{\sim}{\kappa}) \cdot (\underset{\sim}{\lambda}) \cdot (\underset{\sim}{\mu})$

κ	
λ	
μ	
A	

$A = \dfrac{B}{\Gamma} \rightsquigarrow B \cdot \Gamma$

B	
Γ	
B/Γ	

$2x^3 + x^2 - 7x - 6 = 0,$

Διαιρέτες του −6:
$\pm 1, \pm 2, \pm 3, \pm 6$

2 1 −7 −6 , −1

$\pm 1, \pm 2, \pm 3, \pm 6$

$$\begin{array}{cccc|c} 2 & 1 & -7 & -6 & -1 \\ \downarrow & -2 & +1 & +6 & \\ \hline 2 & -1 & -6 & \boxed{0} & \end{array}$$

$x - p$

$$2x^3 + x^2 - 7x - 6 = (x+1)(2x^2 - x - 6)$$

$$2x^3 + x^2 - 7x - 6 = 0 \Rightarrow (x+1)(2x^2 - x - 6) = 0$$

$x + 1 = 0$ ή $2x^2 - x - 6 = 0$