15.45

Είναι

$$\boxed{f'(x)} = \alpha_1^x \ln\alpha_1 + 2\alpha_2^{2x}\ln\alpha_2 + \ldots + \nu\alpha_\nu^{\nu x}\ln\alpha_\nu$$

Οπότε

$$f'(0) = 0 \Rightarrow \alpha_1^0 \ln\alpha_1 + 2\alpha_2^{2\cdot 0}\ln\alpha_2 + \ldots + \nu\alpha_\nu^{\nu\cdot 0}\ln\alpha_\nu = 0 \Rightarrow$$

$$\Rightarrow \ln\alpha_1 + 2\ln\alpha_2 + \ldots + \nu\ln\alpha_\nu = 0 \Rightarrow \ln\left(\alpha_1\cdot\alpha_2^2\ldots\alpha_\nu^\nu\right) = 0 \Rightarrow \ln\left(\alpha_1\cdot\alpha_2^2\ldots\alpha_\nu^\nu\right) = \ln 1 \Rightarrow$$

$$\Rightarrow \alpha_1\cdot\alpha_2^2\ldots\alpha_\nu^\nu = 1$$