

22.17 1)

$$\frac{f'(x)}{f(x)} = \ln f(x) \Rightarrow [\ln f(x)]' = \ln f(x) \Rightarrow \ln f(x) = ce^x \Rightarrow f(x) = e^{ce^x} \quad (1)$$

$$\text{Ακόμη } f(1) = e^e \stackrel{(1)}{\Rightarrow} e^{ce^1} = e^e \Rightarrow e^{ce} = e^e \Rightarrow ce = e \Rightarrow c = 1 \quad (2)$$

$$\text{Επομένως } (1), (2) \Rightarrow f(x) = e^{e^x}$$

22.17 2)

$$f(x) + x^2 + \eta\mu x = f'(x) + 2x + \sigma\upsilon\nu x \Rightarrow f(x) + x^2 + \eta\mu x = [f(x) + x^2 + \eta\mu x]' \Rightarrow$$

$$\Rightarrow f(x) + x^2 + \eta\mu x = ce^x \Rightarrow f(x) = ce^x - x^2 - \eta\mu x \quad (1)$$

Ακόμη

$$f(0) = 1 \stackrel{(1)}{\Rightarrow} ce^0 - 0^2 - \eta\mu 0 = 1 \Rightarrow c = 1 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = e^x - x^2 - \eta\mu x}$$

22.17 3)

$$(x^2 + 1)f'(x) + 2xf(x) = (x^2 + 1)f(x) \Rightarrow [(x^2 + 1)f(x)]' = (x^2 + 1)f(x) \Rightarrow$$

$$\Rightarrow (x^2 + 1)f(x) = ce^{x^2 + 1 \neq 0} \Rightarrow f(x) = \frac{ce^x}{x^2 + 1} \quad (1)$$

Ακόμη

$$f(1) = e \stackrel{(1)}{\Rightarrow} \frac{ce^1}{1^2 + 1} = e \Rightarrow \frac{ce}{2} = e \Rightarrow c = 2 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = \frac{2e^x}{x^2 + 1}}$$