

Γ ΛΥΚΕΙΟΥ ΜΕΡΟΣ Α

15.30 1)

$$f(x) = (-3x^2 + 4) \ln x \Rightarrow f'(x) = -6x \ln x + (-3x^2 + 4) \frac{1}{x}$$

$$\text{Άρα } f'(1) = -6 \cdot 1 \cdot \ln 1 + (-3 \cdot 1^2 + 4) \frac{1}{1} = \boxed{1}$$

15.30 2)

$$\text{Αν } f(x) = x^2 + 2x - 5 \Rightarrow f(x) = 2x + 2$$

$$\text{Άρα } f'(1) = 2 \cdot 1 + 2 = 2 + 2 = \boxed{4}$$

15.30 3)

$$\text{Αν } f(x) = x^2 - 3x - 4 \Rightarrow f(x) = 2x - 3$$

$$\text{Άρα } f'(4) = 2 \cdot 4 - 3 = 8 - 3 = \boxed{5}$$

15.30 4)

$$f(x) = \frac{x^2 + 1}{e^x} \Rightarrow f'(x) = \frac{2xe^x - (x^2 + 1)e^x}{(e^x)^2} = \frac{\cancel{e^x}(2x - x^2 - 1)}{(e^x)^2} = \frac{-x^2 + 2x - 1}{e^x}$$

$$\text{Άρα } f'(0) = \frac{-0^2 + 2 \cdot 0 - 1}{e^0} = \boxed{-1}$$

15.30 5)

$$\begin{aligned} f(x) &= \sin x \cdot \eta\mu^3 x \Rightarrow f'(x) = -\eta\mu x \cdot \eta\mu^3 x + \sin x \cdot 3\eta\mu^2 x \cdot \sigma\upsilon\nu x \\ &= -\eta\mu^4 x + 3\eta\mu^2 x \cdot \sigma\upsilon\nu^2 x \end{aligned}$$

$$\text{Άρα } f'(\pi) = -\eta\mu^4 \pi + 3\eta\mu^2 \pi \cdot \sigma\upsilon\nu^2 \pi = -0 + 3 \cdot 0 \cdot 1 = \boxed{0}$$