

22.9 1)

Έχουμε ότι

$$f'(x) = 4x^3 \Rightarrow f'(x) = (x^4)' \Rightarrow f(x) = x^4 + c \quad (1)$$

$$f(2) = 17 \overset{(1)}{\Rightarrow} 2^4 + c = 17 \Rightarrow 16 + c = 17 \Rightarrow c = 1 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = x^4 + 1}$$

22.9 2)

Έχουμε ότι

$$f'(x) = \frac{1}{x} \Rightarrow f'(x) = (\ln x)' \Rightarrow f(x) = \ln x + c \quad (1)$$

$$f(1) = 2 \overset{(1)}{\Rightarrow} \ln 1 + c = 2 \Rightarrow 0 + c = 2 \Rightarrow c = 2 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = \ln x + 2}$$

22.9 3)

Έχουμε ότι

$$f'(x) = \frac{1}{2\sqrt{x}} \Rightarrow f'(x) = (\sqrt{x})' \Rightarrow f(x) = \sqrt{x} + c \quad (1)$$

$$f(9) = -2 \overset{(1)}{\Rightarrow} \sqrt{9} + c = -2 \Rightarrow 3 + c = -2 \Rightarrow c = -5 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = \sqrt{x} - 5}$$

22.9 4)

Έχουμε ότι

$$f'(x) = 5^x \ln 5 \Rightarrow f'(x) = (5^x)' \Rightarrow f(x) = 5^x + c \quad (1)$$

$$f(2) = 23 \overset{(1)}{\Rightarrow} 5^2 + c = 23 \Rightarrow 25 + c = 23 \Rightarrow c = -2 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = 5^x - 2}$$

22.9 5)

Έχουμε ότι

$$f'(x) = \frac{1}{\eta\mu^2 x} \Rightarrow f'(x) = (-\sigma\phi x)' \Rightarrow f(x) = -\sigma\phi x + c \quad (1)$$

$$f\left(\frac{\pi}{4}\right) = 3 \overset{(1)}{\Rightarrow} -\sigma\phi \frac{\pi}{4} + c = 3 \Rightarrow -1 + c = 3 \Rightarrow c = 4 \quad (2)$$

$$(1), (2) \Rightarrow \boxed{f(x) = -\sigma\phi x + 4}$$