

Γ ΛΥΚΕΙΟΥ ΜΕΡΟΣ Α

15.32 1)

Είναι $f'(x) = 6x^2 + 6x - 12$ οπότε

$$f'(x) = 0 \Rightarrow 6x^2 + 6x - 12 = 0 \Rightarrow x^2 + x - 2 = 0 \Rightarrow \begin{cases} x_1 = -2 \\ x_2 = 1 \end{cases}$$

15.32 2)

Είναι $f'(x) = 2x + 6$ οπότε

$$f'(x) = 0 \Rightarrow 2x + 6 = 0 \Rightarrow 2x = -6 \Rightarrow \boxed{x = -3}$$

15.32 3)

Είναι $f'(x) = 3x^2 - 12x - 1$ οπότε

$$f'(x) = -1 \Rightarrow 3x^2 - 12x - 1 = -1 \Rightarrow 3x^2 - 12x = 0 \Rightarrow$$

$$\Rightarrow 3x(x - 4) = 0 \Rightarrow \boxed{x = 0} \text{ ή } \boxed{x = 4}$$

15.32 4)

Είναι $f'(x) = e^{-2x} - 2xe^{-2x}$ οπότε

$$f'(x) = 0 \Rightarrow e^{-2x} - 2xe^{-2x} = 0 \Rightarrow e^{-2x}(1 - 2x) = 0 \xrightarrow{e^{-2x} \neq 0} 1 - 2x = 0 \Rightarrow \boxed{x = \frac{1}{2}}$$

15.32 5)

Είναι $f'(x) = 2x \ln x + x \neq \frac{1}{x} = 2x \ln x + x$ για κάθε $x > 0$ οπότε

$$f'(x) = 0 \Rightarrow 2x \ln x + x = 0 \Rightarrow x(2 \ln x + 1) = 0 \xrightarrow{x > 0} 2 \ln x + 1 = 0 \Rightarrow \ln x = -\frac{1}{2} \Rightarrow \boxed{x = e^{-\frac{1}{2}}}$$

15.32 6)

Είναι $f'(x) = 3x^2 + 2x - 2$ οπότε

$$f'(x) = -4 \Rightarrow 3x^2 + 2x - 2 = -4 \Rightarrow 3x^2 + 2x + 2 = 0, \Delta = -20 < 0$$

άρα η παραπάνω εξίσωση είναι αδύνατη