

ΘΕΜΑ Γ

Γ1) $f(x) = 4x^3 - \frac{7}{2}x^2 + x - 1, x \in \mathbb{R}, x_1 < x_2$

για $x \in \mathbb{R}: f'(x) = 12x^2 - 7x + 1$

$$f'(x) = 0 \Leftrightarrow 12x^2 - 7x + 1 = 0 \Leftrightarrow x_1 = \frac{1}{3} \text{ ή } x_2 = \frac{1}{4}$$

οπώς $x_1 < x_2$, άρα: $x_1 = \frac{1}{4}$ και $x_2 = \frac{1}{3}$

Συνεπώς $P(K) = \frac{1}{4}$ και $P(A) = \frac{1}{3}$.

Είναι $\underline{\Omega} = K \cup A \cup \Pi$.

άρα: $\Pi = (A \cup K)'$ και επειδή τα ενδεχόμενα

K, A, Π είναι αμοιβαία βραστά ανά δύο,

είναι: $P(\Pi) = P(A \cup K)' = 1 - P(A \cup K)$

$$= 1 - P(A) - P(K)$$

$$= 1 - \frac{1}{3} - \frac{1}{4} = \frac{5}{12}$$

Γ2) $P(\Gamma) = P(A \cup K) \xrightarrow{A \cap K = \emptyset} P(A) + P(K) = \frac{1}{3} + \frac{1}{4} = \frac{7}{12}$

$$P(\Delta) = P(\Pi) = \frac{5}{12}$$

$$P(E) = P(A \cup \Pi') = P(A) + P(\Pi') - P(A \cap \Pi')$$

$$= \cancel{P(A)} + (1 - P(\Pi)) - \cancel{P(A)} + P(A \cap \Pi) \rightarrow 0 = \frac{7}{12}$$