

ΕΠΑ.Λ (ΟΜΑΔΑ Α') - ΗΜΕΡΗΣΙΑ
ΛΥΣΕΙΣ

ΘΕΜΑ Α

A₁] Θύρα 6x βιβλίων

A₂] α) ≤ β) ≤ γ) ∧ δ) ≤ ε) ≤

A₃] α) $\ln b - \ln a = \ln \frac{b}{a}$

β) $(g \circ f)'(x) = g'(f(x)) \cdot f'(x)$

δ) $C \cdot [x]_a^b = C \cdot (b-a)$

ΘΕΜΑ Β

B₁] $v_1 + v_2 + v_3 + v_4 + v_5 = 25$

$15 + k + 2k + 1 = 25$

$3k = 9$

$k = 3$

B₂]

x_i	v_i	N_i	$f_i\%$	$x_i \cdot v_i$
1	6	6	24	6
2	5	11	20	10
3	4	15	16	12
4	3	18	12	12
5	7	25	28	35
ΣΥΝΟΛ	25	X	100	75

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B₃] $\bar{x} = \frac{\sum_{i=1}^5 x_i \cdot v_i}{v} = \frac{75}{25} = 3$

$s = 13^2 \text{ παρατήρηση} = 3$

B₄] Τους άξιους 3 φορές : $f_3 + f_4 + f_5 = 16 + 12 + 28 = 56\%$

ΘΕΜΑ Γ

Γ₁] $\lim_{x \rightarrow 1^-} f(x) = a \cdot 1^2 + b \cdot 1 = a + b$

Γ₂] $\lim_{x \rightarrow 1^+} f(x) = \left(\frac{0}{0}\right) = \lim_{x \rightarrow 1^+} \frac{(x-1)(\sqrt{x+3}+2)}{(\sqrt{x+3})^2 - 2^2}$

$= \lim_{x \rightarrow 1^+} \frac{(x-1)(\sqrt{x+3}+2)}{x+3-4} = 2+2 = 4$

Γ₃] A(-1, 2) ανήκει $f(-1) = 2 \rightarrow a \cdot (-1)^2 - b = 2 \rightarrow a - b = 2$ ①

βω (x₀) n f(x) ετo x₀ = 1 $\rightarrow \lim_{x \rightarrow 1^+} f(x) = \lim_{x \rightarrow 1^-} f(x) = f(1)$

Ανο ①, ② άνωτα, προκύπτει: $a + b = 4$ ②
 $a = 3$ $b = 1$

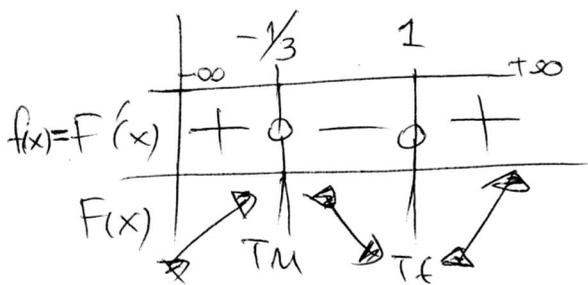
ΘfMA Δ

Δ₁ $F(x) = 3 \cdot \frac{x^3}{3} - 2 \frac{x^2}{2} - x + C$

U m $F(0) = 1$ ε x w : $C = 1$ A p n $F(x) = x^3 - x^2 - x + 1$

Δ₂ $F'(x) = f(x) = 3x^2 - 2x - 1$

$$F'(x) = 0 \rightarrow \Delta = (-2)^2 - 4 \cdot 3 \cdot (-1) = 4 + 12 = 16$$



$$x_{1,2} = \frac{2 \pm 4}{6} \rightarrow \begin{cases} x_1 = 1 \\ x_2 = -\frac{1}{3} \end{cases}$$

fia $x_1 = -\frac{1}{3}$ T.M u m fia $x_2 = 1$ T.ε

Δ₃ fia $x \geq 1$ n $F(x)$ ε i v m \uparrow d p a $2011 < 2012 \rightarrow F(2011) < F(2012)$

Δ₄

$$E = \int_0^1 |f(x)| dx = \int_0^1 (3x^2 - 2x - 1) dx = 3 \cdot \frac{x^3}{3} \Big|_0^1 + 2 \cdot \frac{x^2}{2} \Big|_0^1 + x \Big|_0^1 =$$
$$= -3 \cdot \left(\frac{1}{3} - 0\right) + 2 \cdot \left(\frac{1}{2} - 0\right) + (1 - 0) =$$
$$= -1 + 1 + 1 = +1 \text{ T.μ}$$