

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

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| 1/2 | | 2006 | |
| 3 ساعات | | | |
| 7 | | | : : : |

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|--|-------------------|--|---|
| <u>(3) :</u> | | | |
| $(\sqrt{3}-i)^2$: | (1) | - | 0,5 |
| (E) : $z^2 + (\sqrt{3}+7i)z + 4(-3+i\sqrt{3}) = 0$: \mathbb{C} | (2) | - | 1 |
| $Re(z_2) = 0$: (E) | | $z_2 \quad z_1$ | |
| | | $\frac{z_1+2i}{z_2+2i} = \frac{1}{2} - i\frac{\sqrt{3}}{2}$: | 0,5 |
| C(z_2) B(z_1) A(-2i) : | (3) | $(O, \vec{e}_1, \vec{e}_2)$ | |
| . ABC | - | $(\widehat{AC, AB})$ | 0,5+0,5 |
| <u>(4)</u> | | | |
| $(O, \vec{i}, \vec{j}, \vec{k})$ | ξ | | |
| $\Omega(1,0,0)$ | r=1 | (S) (P) : $x-2y+z=0$ | |
| | | .(S) | (1) |
| .A | (S) | (Q) | .(S) A(1,0,1) (2) |
| .(P) | (S) | (P) | Ω (3) |
| .(P) | | Ω (Δ) | - (4) |
| .(S) (P) | (P) | (Δ) | H - |
| (D) : $\begin{cases} x=1+t \\ y=1-t \\ z=t \end{cases}$; $t \in \mathbb{R}$: | | (D) | (5) |
| | | .(D) (S) | 0,75 |
| <u>()</u> | | | |
| $(U_n)_{n \in \mathbb{N}}$ | | | |
| $V_n = U_n + 5$: | (V _n) | $\begin{cases} U_0 = 2 \\ \forall n \in \mathbb{N} ; U_{n+1} = \frac{2}{5}U_n - 3 \end{cases}$ | |
| | | (V _n) | (1) 0,5 |
| . $\lim_{n \rightarrow +\infty} (U_n)$ | - | (U _n) | n V _n - (2) 0,75+0,5 |
| $\lim_{n \rightarrow +\infty} S_n$ | - | . n S _n | - $S_n = \sum_{i=0}^{i=n} U_i = U_0 + U_1 + \dots + U_n$: (3) 0,25+0,5 |

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| | | <u>(3):</u> | | |
| | | $I = \int_1^2 (x) \ln(x) dx$ | (1) | 1,5 |
| | $(t = \sqrt{e^x})$ | $J = \int_0^{\ln(4)} (x e^x) dx$ | (2) | 1,5 |
| | | <u>(7):</u> | | |
| $x \mapsto \begin{cases} f(x) = \ln\left(\frac{1}{x^2+1}\right) ; x \geq 0 \\ f(x) = \sqrt{e^{-x}-1} ; x < 0 \end{cases}$ | \mathbb{R} | x | f | |
| | (O, \vec{i}, \vec{j}) | f | (Cf) | |
| | $x_0 = 0$ | f | - (1) | 0,5 |
| | 0 | f | - | 0,5 |
| | $\lim_{x \rightarrow -\infty} f(x)$ | $\lim_{x \rightarrow +\infty} f(x)$ | - (2) | 2×0,5 |
| | $(\lim_{x \rightarrow -\infty} (x^2 e^x) = 0 :) \cdot f$ | | - | 0,5 |
| $x \mapsto \begin{cases} f'(x) = \frac{-2x}{x^2+1} ; x > 0 \\ f'(x) = \frac{-e^{-x}}{2\sqrt{e^{-x}-1}} ; x < 0 \end{cases}$ | | | - (3) | 0,5 |
| | | | - | |
| $x \mapsto \begin{cases} f''(x) = \frac{2(x^2-1)}{(x^2+1)^2} ; x > 0 \\ f''(x) = \frac{e^{-x}(e^{-x}-2)}{4(\sqrt{e^{-x}-1})^3} ; x < 0 \end{cases}$ | | | - (4) | 0,5 |
| | | | - | 0,5 |
| | | f | (Cf) (5) | 0,5 |
| $x=1$ | f | \mathbb{R} | - (6) | 2×0,5 |
| | | (Cf) | A (7) | 1 |

