



2025

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(04) : _____

U_1 4 6
 U_2 1 1 3
 $.U_1$ 1 1 3 .1

$.U_2$ U_1 3 -
 $.X$ X -
 $.X$ -

(04) : _____

$:n$ $u_0 = 3$: \mathbb{N} (v_n) (u_n)

$$v_n = \frac{u_n + 3}{u_n - 2} \quad u_{n+1} = \frac{5u_n - 4}{1 + u_n}$$

$.u_n > 2 \quad n$ - .1

$.n$ v_n $\frac{5}{3}$ (u_n) -
 (v_n) - .2

$\lim_{n \rightarrow +\infty} u_n$ n u_n -

$.S_n = \frac{1}{u_0 - 2} + \frac{1}{u_1 - 2} + \dots + \frac{1}{u_n - 2} :$ n .3

(04) : _____

$(z + 3 + 2i)(z^2 - z + 5) = 0$: z \mathbb{C} (I)
 $.(O; \vec{u}, \vec{v})$ (II)

$$z_D = -1 \quad z_C = -3 + 2i \quad z_B = \overline{z_A} \quad z_A = 1 - 2i \quad D \quad C \quad B \quad A$$

$$\cdot |z_C - z_D| \quad |z_B - z_D| \quad |z_A - z_D| \quad - \quad .1$$

$$C \quad B \quad A \quad -$$

$$\cdot ABC \quad \frac{z_A - z_B}{z_C - z_B} \quad .2$$

$$\cdot \{(A; 1), (B; -1), (C; 1)\} \quad G \quad z_G \quad - \quad .3$$

$$\cdot ABCG \quad -$$

(08) :

$$g(x) = \frac{\ln x}{x} + e :]0; +\infty[\quad g \quad .1$$

$$\cdot g \quad -$$

$$\cdot]0; +\infty[\quad g(x) \quad g\left(\frac{1}{e}\right) \quad -$$

$$\cdot f(x) = \frac{1}{2}(\ln x)^2 + ex - e :]0; +\infty[\quad f \quad .2$$

$$\cdot (O; \vec{i}, \vec{j}) \quad (C_f)$$

$$\cdot]0; +\infty[\quad f \quad f'(x) = g(x) :]0; +\infty[\quad x \quad -$$

$$\cdot +\infty \quad 0 \quad f \quad -$$

$$\cdot 1 \quad (C_f) \quad (T) \quad .3$$

$$\cdot (T) \quad (C_f) \quad .4$$

$$\cdot (C_f) \quad (T) \quad .5$$

$$\cdot b \quad a \quad h(x) = x [(\ln x)^2 + a \ln x + b] :]0; +\infty[\quad h \quad .6$$

$$\cdot x \mapsto (\ln x)^2 \quad h \quad b \quad a \quad -$$

$$x = \frac{1}{e} \quad (C_f) \quad A \quad cm^2 \quad -$$

$$\cdot y = ex - e \quad x = 1$$

$$k(x) = e^{2x+1} + 2x^2 - e : \mathbb{R} \quad k \quad .7$$

$$\cdot k(x) = f(e^{2x}) : \mathbb{R} \quad x \quad -$$

$$\cdot k \quad -$$

$$\begin{cases} \alpha + \beta = -1 \\ 2\bar{\alpha} + \beta = 6i \end{cases} : \beta \quad \alpha \quad .1$$

B A I (O; \vec{u}, \vec{v}) .2

.z_B = -2 + 2i z_A = 1 - 2i z_I = 1

.B A I -

.[AB] (C) w z_w -

.(C) D z_D z_D = $\frac{3+9i}{4+2i}$ D .3

z_E = e^{iπ/4}z_I + (1 - e^{iπ/4}).z_w z_E (C) E .4

. z_E + $\frac{1}{2}$ -

z_E = $\frac{3\sqrt{2}-2}{4} + \frac{3\sqrt{2}}{4}i$ -

(Δ) x ↦ e^{-2x} (γ) .1

.(Δ) (γ) α y = 4x + 2

g(x) = e^{-2x} - 4x - 2 : ℝ g

ℝ (Δ) (γ) -

.g(x) x

-0,16 < α < -0,15 : -

.f(x) = x + 3 - 2xe^{2x} : ℝ f .2

(O; \vec{i}, \vec{j}) (C_f)

.+∞ -∞ f -

.f f'(x) = e^{2x}g(x) x -

.(D) (C_f) (D) (C_f) .3

.f(α) = $\frac{2\alpha^2 + 6\alpha + 3}{2\alpha + 1}$: .4

.(f(α) = 3,07) (C_f) (D) .5

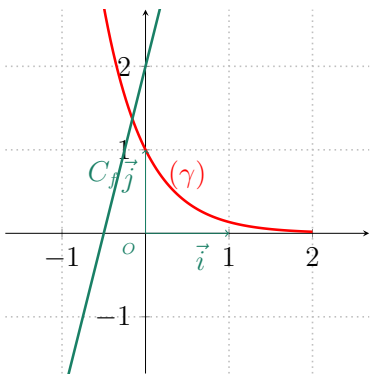
(D) (C_f) - .6

f(x) = x + m m -

$\int_0^x 2te^{2t} dt$ x - .7

(C_f) A(λ) λ 0 λ -

.lim_{λ→-∞} A(λ) y = x + 3 x = λ x = 0



.2cm