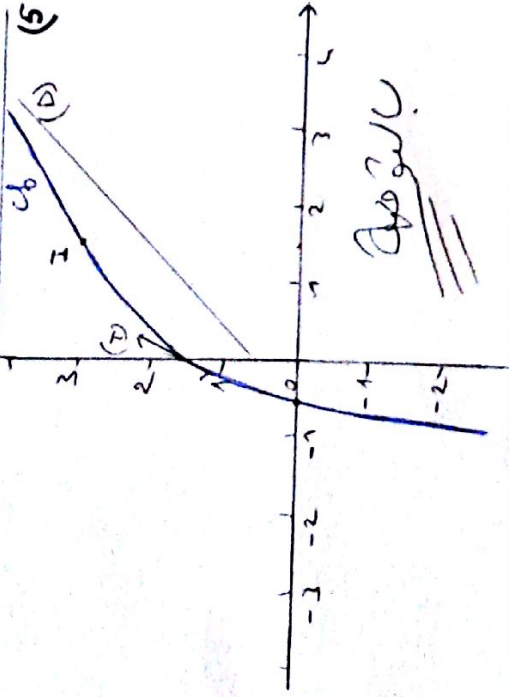


$f'(x) = 1 + 0 + 2e^{-x} + (2x+1)(-e^{-x})$
 $= 1 + \frac{2}{e^x} - (2x+1)e^{-x} = \frac{e^x + 2 - 2x - 1}{e^x} = \frac{e^x + 2x + 1}{e^x}$

$f(x) > 0 \Rightarrow f(x) > 0$ and $e^x > 0$
 $f(x) = \frac{e^x + 2x + 1}{e^x}$
 $f(0) = \frac{1+0+1}{1} = 2$
 $f'(0) = \frac{1+2}{1} = 3$
 $y = f'(0)(x-0) + f(0) = 2x + 2$



$A = \left[\frac{x^2}{2} + \frac{x}{2} \right]_0^1 = 1 - 0 = 1$
 $u(x) = -e^{-x} \Rightarrow u'(x) = e^{-x}$
 $v(x) = 2x \Rightarrow v'(x) = 2$
 $B = \int_0^1 (-2x+n)e^{-x} dx = \int_0^1 -2e^{-x} dx + \int_0^1 2xe^{-x} dx$
 $= [-3e^{-x} + 2] - [2e^{-x}x + 2]_0^1 = -3e^{-1} + 2 - [2e^{-1} + 2] = 3 - \frac{4}{e}$
 $S = \int_0^1 f(x) dx = \int_0^1 (u(x)v(x)) dx = \int_0^1 (2mx+n)e^{-x} dx$
 $= \int_0^1 (2x + \frac{1}{2}) dx + \int_0^1 (2m+1)e^{-x} dx$
 $= 1 + \frac{1}{2} - \frac{1}{e} + 2 = 4 - \frac{1}{e} + 2m + 1$

تاريخ: 2014/2015 (صفر)
 إشارات: حد التفاضل الجزئي (2014)
 د: توصيف بنصر

$z' - c = e^{\frac{2x}{3}}(z-c) = (-\frac{1}{3} + \frac{\sqrt{3}}{3})(z-c)$
 $z' = (-\frac{1}{3} + \frac{\sqrt{3}}{3})z + 4 - 4\sqrt{3} + 8$
 $z' = (-\frac{1}{3} + \frac{\sqrt{3}}{3})z + 12 - 4\sqrt{3}$

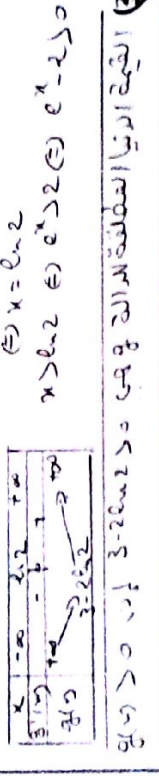
$z' = (-\frac{1}{3} + \frac{\sqrt{3}}{3})z + 12 - 4\sqrt{3}$
 $= -3 - \sqrt{3} + 3\sqrt{3} - 3 + 12 - 4\sqrt{3} = 6 - 2\sqrt{3}$
 $\frac{a}{b} = \left[1, \frac{\sqrt{3}}{3} \right]$ and $\frac{b-c}{a-c} = \left[1, \frac{2\sqrt{3}}{3} \right]$
 $\frac{a-b}{b-a} \times \frac{b-c}{a-c} = \left[1, \frac{\sqrt{3}}{3} \right] \times \left[1, \frac{2\sqrt{3}}{3} \right] = \left[1, \frac{3\sqrt{3}}{3} \right] = \left[1, \sqrt{3} \right] = -1$

التوزيع: نتعب نأكلنا إن نعمل عدد ارباع الخبث = 36
 $X=1 \rightarrow (1,0) \quad P(X=1) = \frac{36}{12} = 3$
 $X=2 \rightarrow (1,2) \quad P(X=2) = \frac{36}{12} = 3$
 $X=4 \rightarrow (2,2) \quad P(X=4) = \frac{36}{36} = 1$

x_1	$\frac{2}{3}$	$\frac{1}{3}$
$p(x_i)$	$\frac{5}{12}$	$\frac{1}{12}$

$P(A) = \frac{A_1^2 \times A_1^5 \times 2! \times 1!}{504} = \frac{180}{504} = \frac{5}{14}$
 $P(A) = \frac{A_1^3 + A_1^2}{504} = \frac{126}{504} = \frac{1}{4}$
 $P(A/B) = \frac{P(A \cap B)}{P(B)} = \frac{5/84}{1/4} = \frac{5}{21}$
 $P(A \cap B) = A_1^1 \times A_2^2 \times 3! + A_1^1 \times A_2^2 \times 3! = \frac{360}{504} = \frac{5}{7}$

مسألة:
 $g(x) = \frac{e^x}{x} - 2 + \frac{1}{x} = \frac{e^x - 2x + 1}{x}$
 $g'(x) = \frac{e^x - 2}{x^2} = 0 \Rightarrow e^x - 2 = 0 \Rightarrow x = \ln 2$
 $g''(x) = \frac{e^x + 2}{x^3} > 0$ for $x > 0$



$\lim_{x \rightarrow -\infty} x + \frac{1}{2} = -\infty$ and $\lim_{x \rightarrow -\infty} (2x+1)e^{-x} = -\infty$
 $\lim_{x \rightarrow -\infty} \frac{f(x)}{g(x)} = \lim_{x \rightarrow -\infty} \frac{1 + \frac{1}{2x}}{2x + 1 + (2 - \frac{1}{2x})e^{-x}} = 1 + 0 = 1$

$d(u, P) = \frac{|2+4-3+3|}{\sqrt{1+4+1}} = \frac{6}{\sqrt{6}} = \sqrt{6}$

$R = \sqrt{6}$
 $(S): (x-2)^2 + (y-2)^2 + (z-3)^2 = 6$
 $(S): x^2 + y^2 + z^2 - 4x - 4y - 6z + 11 = 0$
 $d(u, S) = \frac{|Ax + By + Cz + D|}{\sqrt{A^2 + B^2 + C^2}} = \frac{|1x + 1y + 1z + 11|}{\sqrt{3}} = \frac{1}{\sqrt{3}}$
 $A \cap B \cap C = (1, -3, -1)$
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 $22t^2 - 66t + 44 = 0 \Rightarrow t = 1, 2$
 $t = 1 \Rightarrow E(1, 1, 5); t = 2 \Rightarrow F(4, 3, 2)$

التوزيع: من أجل $n=4$: $U_{n+1} = 4$ مختلف
 $U_{n+1} - U_n = -U_n^2 + 6U_n - 9 = -(U_n - 3)^2 \leq 0$
 $U_{n+1} - U_n = \frac{9}{4U_n - 12} = \frac{3(U_n + 6)}{4(U_n - 3)}$
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