

LDDR – Niveau 2: TE 28 Révision Analyse - Induction

Mathematics L2

EXAM 1

B

G321(3MG01)

12.9.19

Exercise 1 Solve $4 \cdot e^{2x+1} = 3 \cdot e^{2-x}$ (give an exact value and shorten your answer)

Exercise 2 Determine the asymptotes for the function $f(x) = \frac{\ln(x)}{2e^x - 2e}$

Exercise 3 Consider the function $f(x) = \ln(x) + k + \frac{4}{\ln(x)}$ ($k \in \mathbb{R}$)

- 1) Find the value of k such that the graph of f passes through the point $(e^2; 1)$.
- 2) Determine all the values of k for which the function f has no x -intercept.

Now let $k = 4$, so $f(x) = \ln(x) + 4 + \frac{4}{\ln(x)}$.

- 3) Give the domain, the asymptote(s) and the extremum(s).

Exercise 4 Given the function $f(x) = e^{\frac{x}{2}}$.

Find, on the graph of f , the point P for which the tangent to the graph passes through the point $\left(1; \frac{2}{\sqrt{e}}\right)$.

Exercise 5 1) Prove that $\sum_{i=0}^n i \cdot 2^i = 2 + (n-1) \cdot 2^{n+1}$.

2) Given the function $f(x) = \ln(1+x)$.

Calculate $f'(x)$, $f''(x)$, $f'''(x)$ and $f^{(4)}(x)$.

Guess $f^{(n)}(x)$ and prove your result.