

열 및 통계 물리 2 (수시고사 1)

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자연과학 대학

학과

학년

학번:

성명:

A. x_1 and x_2 are chosen at random between 0 and 1.

1. What is the expectation value of x_1 ?
2. What is the probability that both x_1 and x_2 are smaller than 0.3?
3. x_3 is the minimum of x_1 and x_2 . What is the expectation value of x_3 ?

B. Evaluate the following integrations.

4. $\int_0^\infty e^{-ax} dx$

5. $\int_0^\infty xe^{-ax} dx$

6. $\int_{-\infty}^\infty e^{ax^2} dx$

C. Explain the followings briefly in words.

7. Equilibrium and Nonequilibrium states
8. Reversible and irreversible processes
9. Entropy
10. Thermodynamic laws