

열 및 통계 물리 1 (수시고사 1)

출제교수명: 정형채

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자연과학 대학

학과

학년

학번:

성명:

1. [5점] A, B 두 사람이 걸다가 1,000원을 주웠다. 동전 하나를 번갈아 던져 앞 쪽이 먼저 나오는 사람이 1,000원을 모두 갖기로 하였다. A부터 동전을 던진다면, B의 기대값은 얼마인가?

2. [5점] 다음을 번역하시오

The simplest random walk is a path constructed according to the following rules:

- There is a starting point.
- The distance from one point in the path to the next is a constant.
- The direction from one point in the path to the next is chosen at random, and no direction is more probable than another.

The average straight-line distance between start and finish points of a one-dimensional random walk of  $n$  steps is on the order of  $\sqrt{n}$ , or more precisely, its asymptote converges to  $\sqrt{\frac{2n}{\pi}} \approx 0.8\sqrt{n}$ . If “average” is understood in the sense of root-mean-square, then the average distance after  $n$  steps is higher, but still less than  $\sqrt{n}$  times the step length.