sets.exe   Exercises for Chapter sets

Exercise sets.hardhat

For the following, write the set described in set-builder notation.

   a. $A = \{2, 3, 5, 9, 17, 33, \cdots\}$.
   b. B is the set of integers divisible by 11.
   c. $C = \{1/3, 1/4, 1/5, \cdots\}$.
   d. D is the set of reals between -3 and 42.

Exercise sets.2

Let $x, y \in \mathbb{R}^n$. Prove the Cauchy-Schwarz Inequality

$$|x \cdot y| \leqslant \|x\|\|y\|. \qquad (1)$$

Hint: you may find the geometric definition of the dot product helpful.

Exercise sets.3

Let $x \in \mathbb{R}^n$. Prove that

$$x \cdot x = \|x\|^2. \qquad (2)$$

Hint: you may find the geometric definition of the dot product helpful.

Exercise sets.4

Let $x, y \in \mathbb{R}^n$. Prove the Triangle Inequality

$$\|x + y\| \leqslant \|x\| + \|y\|. \qquad (3)$$

Hint: you may find the Cauchy-Schwarz Inequality helpful.

Probability