BSM Course on Markov Chains and Dynamical Systems, Spring 2025 Quiz #1, February 14; NAME:

1. Two cards are drawn (without replacement) from a usual deck of 52 cards. Let

 $A = \{$ The first card drawn is an ace. $\}$ $B = \{$ The second card drawn is an ace. $\}$

Compute (i) $\mathbb{P}(A) =$

(ii) $\mathbb{P}(B|A) =$

- (iii) $\mathbb{P}(B \cap A) =$
- (iv) Are B an A independent?
- 2. We keep rolling a fair die until it turns up 6 for the first time. Let X denote the number of flips. Compute: $\mathbb{P}(X \text{ takes an odd value}) =$