

Math 105 (Term 183)
Quiz 4 (Duration = 20 minutes)

Student Name: _____ Student ID: _____

Exercise 1. [10 points] A coin is tossed 5 times and the resulting sequence of heads and tails is recorded (e.g., THHTH)

(a) [2 points] How many sequences have exactly 3 tails.

(b) [2 points] How many sequences have at most 3 tails.

(c) [2 points] How many sequences have at least 3 tails.

(d) [4 points] What is the probability that a sequence has at most 3 tails? (Give the final result as a reduced fraction: no decimal)

Exercise 2. [10 points] A first card is drawn from a deck of 52 cards. Then, a second card is drawn. Let $E := \{\text{Second card is a Spade}\}$ and $F := \{\text{First card is a Diamond}\}$

(a) [4 points] Set the tree diagram with all corresponding probabilities.

(b) [4 points] Find $P(E)$. (Give the final result as a reduced fraction: no decimal)

(c) [1 point] Find $P(E | F)$. (Give the final result as a reduced fraction: no decimal)

(d) [1 point] Are E and F independent?