## CS 333202: Probability and Statistics HW3 Part I

1. F, the distribution function of a random variable X, is given by

$$F(t) = \begin{cases} 0 & t < -1\\ (1/4)t + 1/4 & -1 \le t < 0\\ 1/2 & 0 \le t < 1\\ (1/12)t + 7/12 & 1 \le t < 2\\ 1 & t \ge 2. \end{cases}$$

Calculate the following quantities: P(X < 1), P(X = 1),  $P(1 \le X < 2)$ , P(X > 1/2), P(X = 3/2), and  $P(1 < X \le 6)$ 

- 2. Airline A has commuter flights every 45 minutes from San Francisco airport to Fresno. A passenger who wants to take one of these flights arrives at the airport at a random time. Suppose that X is the waiting time for this passenger; find the distribution function of X. Assume that seats are always available for these flights.
- 3. In a small town there are 40 taxis, numbered 1 to 40. Three taxis arrive at random at a station to pick up passengers. What is the probability that the number of at least one of the taxis is less than 5?