Name:

MATH 320: In-Class 11

1. Let $T \sim \text{Uniform}\,(0, 120)$.
   (a) Find $P(60 < T < 75)$.

   (b) Find $P(T > 50 \mid T > 30)$.

   (c) Let x be any real number in the interval $[30, 120]$. Find $P(T > x \mid T > 30)$.

   (d) Using your answer from part c, can we say anything about this function of x? (i.e. does the function match the cdf or survival of a particular distribution)?

2. Let $T \sim \text{Exponential}\,(\lambda = 1/3)$.
   (a) Find $P(T < 6)$.

(b) Find $P(T > 8)$.

(c) Use the cdf to find $P(2 < T < 5)$.

(d) Use the memoryless property to find $P(T > 8 \mid T > 3)$.

(e) Use the memoryless property to find $P(T < 9 \mid T > 4)$.

3. Let $T \sim \text{Exponential}\,(\lambda)$ with median equal to 5. Find $P(T > 4)$.

4. Let X have an exponential distribution with E(X) = 5. Find the 30th percentile of X.