Show **all** of your work on this assignment and answer each question fully in the given context.

If you cannot submit your homework in the class, you can drop it at my office door in 3220 Snedecore Hall by Thursday at 03:30 PM.

Please staple your assignment and write your name !

1. The mileage to first failure for a model of military personnel carrier can be modeled as exponential with mean $1,000$ miles.

   (a) Find the probability that a vehicle of this type gives less than 500 miles of service before first failure.[5 pts]

   (b) Find the probability that a vehicle of this type gives less than 2000 miles of service before first failure. [5 pts]

2. (Ch. 5.2, Exercise 2, pg. 263) Suppose that Z is a standard normal random variable. Evaluate the following probabilities involving Z:

   (a) $P[Z < -.62]$ [3 pts]

   (b) $P[Z > 1.06]$ [3 pts]

   (c) $P[-.37 < Z < .51]$ [3 pts]

   (d) $P[|Z| \leq .47]$ [3 pts]

   (e) $P[|Z| > .93]$ [3 pts]

   (f) $P[-3.0 < Z < 3.0]$ [3 pts]

   Now find numbers # such that the following statements involving Z are true:

   (a) $P[Z \leq \#] = .90$ [3 pts]

   (b) $P[|Z| \leq \#] = .90$ [3 pts]

   (c) $P[|Z| > \#] = .03$ [3 pts]

Total: 77 pts