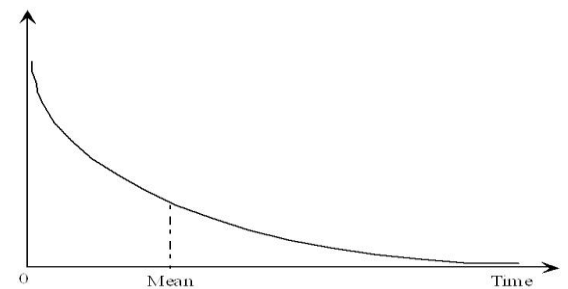# Computer Server Problem
(10 points)

- ➢ Write an algorithm that simulates a computer server with the following specifications.
- ➢ The server consists of **2** computers.
- ➢ Each computer has a certain amount of time it can give.
- ➢ Tasks arrive at random intervals and attempt to use one of the available computers:
- ➢ If a computer is available, the task is immediately allowed to use it.
- ➢ Each task requires a certain amount of time (random number) and must wait for a time proportional to that amount of time.
- ➢ For example, a task may need some x amount of memory and will use the computer for **Y** sec.
- ➢ If all computers are currently being used, then an arriving task waits in a **Queue** until one of the computers becomes available.

The time intervals between two tasks have an **exponential probability** density function with **average time** = **3** secs, which describes the frequency of tasks arriving. So, you need to figure out how to create *exponentially distributed random numbers.* The average service time/task can be represented by a random number between 1 **and 5** secs of your choice.

Part I: You must submit an algorithm showing the detailed design that matches the above specifications.

The Exponential Distribution for Interarrival Times

Part II: You must submit a complete implementation of your design using C++ / Java /Python. Your implementation must be carefully tested against the above specifications.

Queue

Server

Computer 1

Computer 2

exponentially distributed interarrivals time