Name:

Quiz 3 – 9/21/2022

Instructions. You have 15 minutes to complete this quiz. You may use your plebe-issue calculator. You may use your own class materials (i.e., notes, homework, textbook).

Show all your work. To receive full credit, your solutions must be completely correct, sufficiently justified, and easy to follow.

Problem	Weight	Score
1	1	
2	1	
3	1	
4	1	
5	1	
Total		/ 50

For Problems 1-5, consider the following setting.

Patients arrive at the Simplexville Hospital emergency room at a rate of 5 per hour. A doctor works an 8-hour shift from 12 a.m. until 8 a.m. Suppose the arrivals follow a Poisson process.

Problem 1. What is the expected number of patients that the doctor will see between 12 a.m. and 3 a.m.?

Problem 2. What is the probability that the doctor will see exactly 10 patients between 12 a.m. and 3 a.m.?

Problem 3. What is the probability that the doctor will see her 17th patient before or at 3 a.m.?

Problem 4. If the doctor has seen exactly 5 patients by 2 a.m., what is the probability that the doctor will see a total of 20 or more patients by 4 a.m.?

Problem 5. What is the expected number of patients the doctor will see during her shift, if she sees exactly 30 patients by 4 a.m.?