

**Howard University Math Department**

Instructions:

PLEASE PROVIDE STEP BY STEP EXPLANATIONS

WRITING ONLY ANSWERS WILL NOT GET FULL CREDIT

Time Limit 30 minutes

Please read the questions carefully before answering

1. (15 points) Find the sum of the first 20 terms  $S(20) = a_1 + a_2 + \dots + a_{20}$  of the following geometric sequence. You must use the formula for the sum of a geometric sequence. You can leave answer as a fraction but simplify as much as is possible. Can you find the infinite sum? if so, what is it?

$$\frac{1}{3}, \frac{2}{9}, \frac{4}{27}, \frac{8}{81}, \dots$$

2. (Extra credit 5 points) Name five areas in life that rely heavily on statistics.

3. (15 points) Make a stem-leaf table, frequency table, and a line graph (draw by hand) for the following data:

The five year averages of arctic ice amounts from 1980 to 2024 (average of ice amounts from 80 to 84, 85 to 89, etc.,) are :

$$7.05, 6.93, 6.54, 6.39, 6.00, 4.99, 4.49, 4.42, 4.36$$

What is happening to the arctic ice over the years?