SECTION I **Short-Answer Questions:** in Questions 1-6 give a short explanation of your answer along with the answer itself.

1. **(2 marks)** Compute

$$\sum_{k=1}^{10} \frac{3^k}{\pi^k}.$$

Explain your answer.

$$\sum_{k=0}^{10} \left(\frac{3}{\pi}\right)^k = \frac{3}{\pi} \sum_{k=0}^{9} \left(\frac{3}{\pi}\right)^k = \left(\frac{3}{\pi}\right) \frac{\left(1 - \left(\frac{3}{\pi}\right)^{10}\right)}{1 - \frac{3}{\pi}}$$