2. Sums and Products

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Homework0 due Jun 5, 2024 17:29 IST Completed

Summation Notation

1/4 points (graded)

Compute the following sums.

(Enter closed-form expressions, without summation notation, in terms of the variables given in each question. Refer to the "Standard Notation" button for help with input.)

1. $\sum_{i=0}^{N} 1 =$ N + 1 ✔

$N+1$

$\sum_{}^{K} \sum_{}^{T}$ K * T^2 ✖

$\sum_{i=0}$

$N+1$

2. $\sum_{k=1}^{K}\sum_{t=1}^{T} 1 =$ K * T^2 ✖

$K \cdot T^2$

3. $\sum_{k=1}^{K}\sum_{t=1}^{T} 0.5^k =$ K * (1 - 0.5^T + 1) ✖

$K \cdot \left(1 - 0.5^T + 1\right)$

4. $\sum_{k=1}^{\infty}\sum_{t=1}^{T} 0.5^k =$ 1 ✖

1

Hint: If you are unfamiliar, look up arithmetic and geometric series.

STANDARD NOTATION

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Product Notation

2.0/2.0 points (graded)

The notation $\prod_{i=1}^{N} p_i$ denotes the product with N factors:

$$\prod_{i=1}^{N} p_i = p_1 p_2 \cdots p_N .$$

Compute the following products.

(Enter closed-form expressions, without product notation, in terms of the variables given in each question.)

1. $\prod_{i=1}^{M} \frac{1}{\theta} =$ (1/theta)^M ✔

   $\left(\frac{1}{\theta}\right)^M$

2. $\prod_{k}^{K} \frac{k}{k+1} =$ 1/(K+1) ✔

1. $\prod_{i=1}^{M} \frac{1}{\theta} =$ (1/theta)^M ✔

$\left(\frac{1}{\theta}\right)^{M}$

2. $\prod_{k=1}^{K} \frac{k}{k+1} =$ 1/(K+1) ✔

$\frac{1}{K+1}$

3. $\ln\left(\prod_{k=1}^{K} e^{k}\right) =$ 1/2*K*(K+1) ✔

$\frac{1}{2} \cdot K \cdot (K+1)$

STANDARD NOTATION

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