

ER1. Using math induction, prove that for each $n \in \mathbb{N}$

$$\sum_{i=1}^n i(i!) = (n+1)! - 1 .$$

Hints. Recall $n! = 1 \cdot 2 \cdots (n-1) \cdot n = n \cdot (n-1) \cdot (n-2) \cdots 2 \cdot 1$.

So $(n!)(n+1) = (1 \cdot 2 \cdots n)(n+1) = (n+1)!$.

Don't forget needed parentheses: $(n!)(n+1) \neq (n!)n+1$.

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DELETE this whole sentence and THEN put your answer to ALL parts down here.