PartialProduct Gransbury

Isabella Gransbury
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Problem 1. The partial product I created is:

$$\sum_{i=1}^{n} i^2 + i! \,/\, (i-1)!.$$

Problem 2. Converge or Diverge?
Product 1: I believe the product will diverge because at 45 terms the product steadily increases towards positive infinity.
Product 2: I believe the product will converge to 0. At 45 terms the last 15 converge to 0.
Product 3: I believe the product will diverge because at 45 terms the product steadily increases towards positive infinity.