Alternative Factorials

If you complete this groupwork in class, you may cite your results on your Professional Problem.

Define $G(n) = \int_0^\infty x^n e^{-x}\, dx$.

1. Use Integration by Parts to prove $G(1) = 1$.

2. Evaluate $\lim_{t\to\infty} \frac{t^n}{e^t}$.