P1. Compute
\[ \int_{1/e}^{e} \frac{\ln(x)}{\sqrt{x}} \, dx \]

P2. Fernando’s Discount Cruise Missiles is a rapidly growing business. Every year since it was established, it has yielded a revenue of \( \frac{1}{2}t^2 \) million dollars. If Fernando reinvests this revenue at a continuously compounded interest rate of \( r \) per year, how much money can he expect to accumulate after \( T \) years? Give your answer in terms of \( r \) and \( T \).