Problem 1. A philanthropist endows a chair. This means that she donates $1,000,000 to the university. The university invests the money (it earns compounded continuously interest). Denote the interest rate on the investment by $r$ (e.g. if $r=0.06$, then the investment earns interest at a rate of 6% compounded continuously) and the balance in the investment account at time $t$ by $B(t)$.

Write and solve a differential equation for $B(t)$ using the initial condition.

Problem 2. Compute $T_0^2 f(x), T_1^2 f(x), T_2^2 f(x)$ for $f(x) = \ln(x)$. 