4. [12 points] A bank account earns 2.5% annual interest compounded continuously. Continuous payments are made out of the account at a rate of $15,000 per year for 18 years.

    a. [4 points] Write a differential equation describing the balance $B = f(t)$, where t is in years satisfying $0 \leq t \leq 18$.

    b. [4 points] Solve the differential equation you found in part (a) given an initial balance of B_0.

    c. [4 points] What was the initial balance if the account has $10,000 remaining 18 years after the account was opened? Give your answer to the nearest penny.