2. Continuous compound interest can be calculated using the formula $A(t) = Pe^{rt}$, where P is the initial amount and $A(t)$ is the value after time t at interest rate r (as a decimal).

   (a) When Angela was born, her grandparents deposited \$5,000 into a college savings account paying 6% interest compounded continuously. What is the balance after 15 years? Round your answer to two decimal places.

   (b) If her grandparents want her to have \$15,000 after 17 years, how much would they need to invest? Round your answer to two decimal places.

3. The population of a certain species of bacteria can be modeled by the function $P(t) = P_0(2)^t$, where P_0 is the initial population and $P(t)$ is the population after t days. If it took one week for the population to reach 64,000, what was the initial population?