1. (2 points) Suppose \( P(t) = 80(0.9)^t \) represents some population \( t \) years from now. Which one of the following statements is true?

(a) The population will increase by 10% per year.
(b) The population will increase by 10 people per year.
(c) The population will increase by 20% per year.
(d) The population will increase by 20 people per year.
(e) The population will increase by 80% per year.
(f) The population will increase by 80 people per year.
(g) The population will increase by 90% per year.
(h) The population will increase by 90 people per year.
(i) The population will decrease by 10% per year.
(j) The population will decrease by 10 people per year.
(k) The population will decrease by 20% per year.
(l) The population will decrease by 20 people per year.
(m) The population will decrease by 80% per year.
(n) The population will decrease by 80 people per year.
(o) The population will decrease by 90% per year.
(p) The population will decrease by 90 people per year.

2. (2 points) Given that \( 35 = 10(7)^t + 5 \). Without using a calculator find the exact value of \( t \).

(a) \( \frac{3}{7} \)  
(b) \( \ln \left( \frac{3}{7} \right) \)  
(c) \( \ln \left( \frac{7}{3} \right) \)  
(d) \( \frac{\ln 3}{\ln 7} \)  
(e) \( \frac{\ln 7}{\ln 3} \)

(f) \( \frac{5}{7} \)  
(g) \( \ln \left( \frac{5}{7} \right) \)  
(h) \( \ln \left( \frac{7}{5} \right) \)  
(i) \( \frac{\ln 5}{\ln 7} \)  
(j) \( \frac{\ln 7}{\ln 5} \)
3. (3 points) In the year 1980 a town’s population was 20,000. In the year 2000 its population was 40,000. If the population grew exponentially, then what was the annual percentage increase over this period?

4. (3 points) A product costs $200 today but the cost will be reduced by 4% per day. Find a formula for $A(t)$, the cost in dollars of the product $t$ days from now.