1. In 1999, a population of deer (a type of large animal) was set free on a previously uninhabited island in Lake Superior, in an attempt to establish a permanent population of deer on the island. The population of deer grew over time. Population measurements were made each year, as shown in the following table:

Year	1999	2000	2001	2002
Population	20	23	27	31

Let $P(t)$ be a function that gives the population of deer on the island as a function of time, t, measured in years since 1999.

(a) (2 points) In the context of this problem, give a practical interpretation for $P(40)$.

(b) (2 points) In the context of this problem, give a practical interpretation for P^{-1}(40).

(c) (3 points) Assume that the deer population at time t is represented by an exponential function $P(t) = P_0 a^t$. Find P_0 and a, and express your answer as a function.

(d) (2 points) According to your answer to part (c) what is the annual percent growth rate of the deer population?

(e) (3 points) Use the table above to estimate $(P^{-1})'(27)$. Do not assume that the deer population is modeled by the formula from part (c).

(f) (2 points) Give a practical interpretation in the context of this problem for $(P^{-1})'(27)$.