Exponential Population Growth of Rabbits in Australia

The proliferation of rabbits after their introduction to Australia is a famous example of population growth. In 1859, a southern Australian farmer homesick for England imported two dozen (24) wild English rabbits and set them free on his land. Within six years (72 months), Thomas Austin's 24 rabbits had multiplied to 22 million!

Applying the Law of (Uninhibited) Exponential Growth:

\[ P(t) = P_0 e^{rt} \]

- \( P(t) \) is the population at time \( t \), measured in months,
- \( P_0 \) is the initial population (24 rabbits), and
- \( r \) is the growth rate (19% per month).

\[ P(t) \approx 24 e^{0.19t} \]

models the exponential growth of the rabbits.
Rabbits spread across Australia at a rate of 70 miles a year, reaching every corner of the continent by 1907. By the 1930s, the rabbit population in Australia was estimated at 750 million.

[After the initial release of the 24 rabbits, the rabbit population increased exponentially. However, after a period of time, the population growth rate decreased and eventually the population leveled out – this more closely models a logistics function.]

Rabbits became a plague, eating the best grass, fouling water holes, devouring crops, gnawing young trees... Seven rabbits eat as much as one sheep. It was estimated that half of each dollar spent by Australian farmers on machinery, fertilizer, or seeds actually went to feed rabbits. In the early 1950s, the Australians introduced Myxomatosis, a disease fatal to European rabbits, reducing the rabbit population by 90 percent. Wool production immediately increased by 70 million pounds (clip weight of wool).

( some information was extracted from http://uts.cc.utexas.edu/~bramblet/ant301/sixa1.html )