In Class Exercises (ICE) - 10/27/00

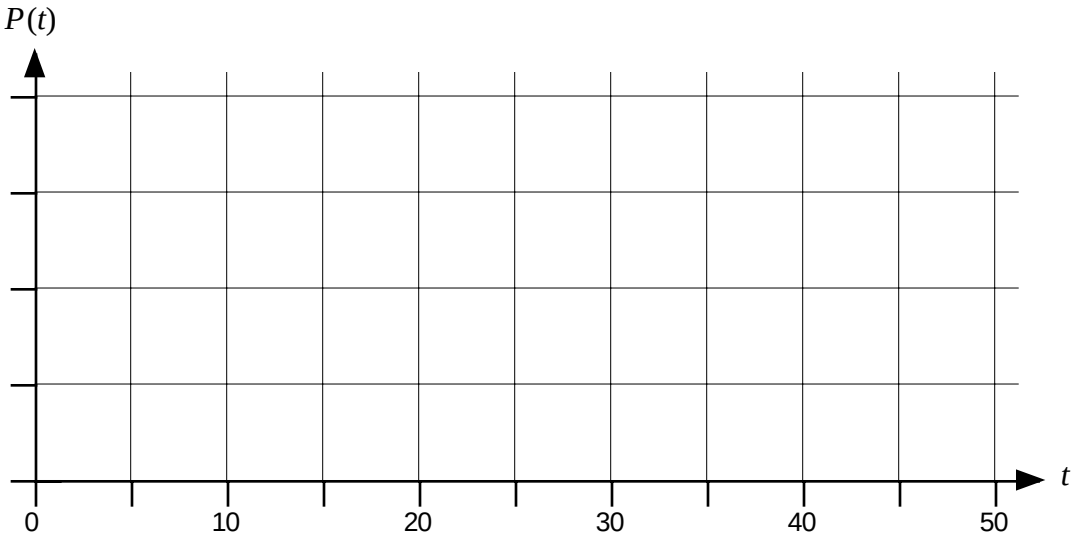
The British explorer Captain James Cook had a policy of releasing pigs on Pacific Islands. His plan was that the pigs would breed and become a food supply for explorers and shipwrecked sailors. The wild descendents of these pigs are called "Captain Cookers" in Australia and New Zealand.

At year t=0, a small group of pigs is released onto an island where there are no pigs to start with. Studies by 18th century naturalists suggests that the number of pigs on the island after 't' years will be approximated by:

$$P(t) = \frac{1000}{1 + 19 \cdot (0.9)^t}.$$

- ***Evaluate the expressions P(0), P(10) and P(50) and explain their meaning in terms of pigs.***

- ***Use the axes provided below to sketch a graph of P(t) versus time.***



Is the shape of this graph consistent with what you would expect?

- ***The value of P'*(10) *is 12. Explain what the practical meaning of this number is in terms that a shipwrecked sailor could understand.***

- ***How many pigs can the island support? How can you work this out?***