

(1.9) Consider the function shown in Fig. 1.8. Calculate

- (a) $g(-30)$
- (b) $g(-20)$
- (c) $g(0)$
- (d) $g(10)$
- (e) $g(20)$

(1.10) Consider the function shown in Fig. 1.8.

- (a) If $g(x) = -10$, what is x ?
- (b) If $g(x) = 15$, what is x ?
- (c) If $g(x) = 50$, what is x ?

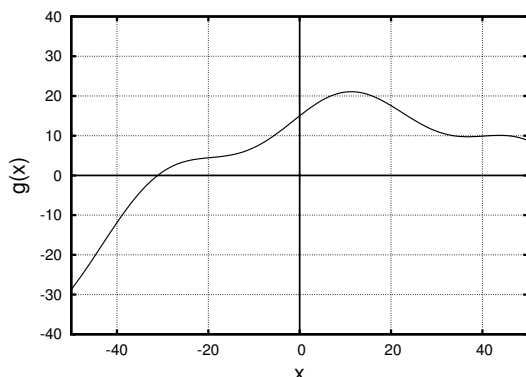


Fig. 1.8 The function for Exercises 1.9 and 1.10.

(1.11) ★ Figure 1.9 shows a possible relationship between this year's and next year's population of rabbits on a small coastal island. The reason that the rabbits may be considered to behave this way is as follows. Let us imagine that the rabbits do not have any predators on this island, but that there is a limited amount of food, since the island is small. Suppose

there are a lot of rabbits on the island one year, say 100. Then there will not be enough food on the island for all the rabbits, and some will starve. So there will be fewer rabbits in the following year. This is indicated on the graph in Fig. 1.9; if one year there are 100 rabbits, the next year there will be approximately 63 rabbits. On the other hand, suppose there are few rabbits on the island, say 10. Then there will be plenty of food to go around, the well-fed rabbits will reproduce, and there will be more rabbits next year—around 50.

- (a) In 1999 there are 70 rabbits on the island. How many rabbits are there in 2000?
- (b) In 2003 there are 35 rabbits on the island. How many rabbits are there in 2004?
- (c) In 1985 there are 20 rabbits on the island. How many rabbits are there in 1987. Explain your reasoning.
- (d) In 1992 there are 80 rabbits on the island. How many rabbits were there in 1991?

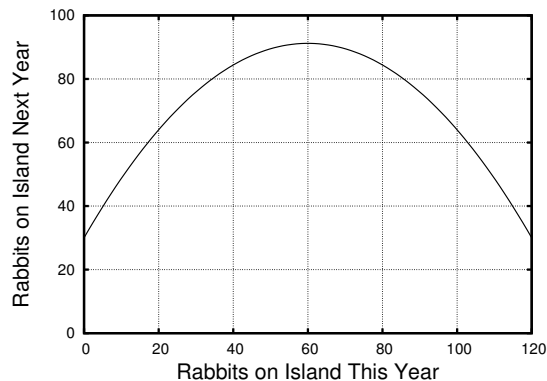


Fig. 1.9 The rabbit population on an island next year as a function of the number of rabbits on the island this year. See Exercise 1.11.