

6.

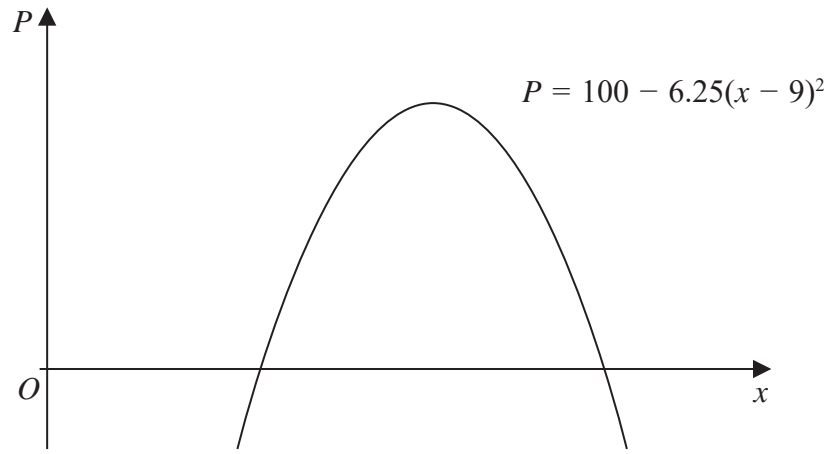


Figure 1

A company makes a particular type of children's toy.

The annual profit made by the company is modelled by the equation

$$P = 100 - 6.25(x - 9)^2$$

where P is the profit measured in thousands of pounds and x is the selling price of the toy in pounds.

A sketch of P against x is shown in Figure 1.

Using the model,

- (a) explain why £15 is not a sensible selling price for the toy. (2)

Given that the company made an annual profit of more than £80 000

- (b) find, according to the model, the least possible selling price for the toy. (3)

The company wishes to maximise its annual profit.

State, according to the model,

- (c) (i) the maximum possible annual profit,
(ii) the selling price of the toy that maximises the annual profit. (2)