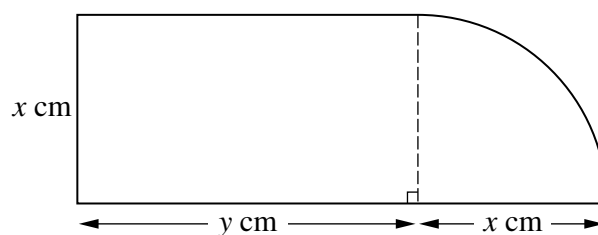**8**

The diagram shows a metal plate consisting of a rectangle with sides x cm and y cm and a quarter-circle of radius x cm. The perimeter of the plate is 60 cm.

  (i) Express y in terms of x. [2]

 (ii) Show that the area of the plate, A cm^2, is given by $A = 30x - x^2$. [2]

Given that x can vary,

(iii) find the value of x at which A is stationary, [2]

 (iv) find this stationary value of A, and determine whether it is a maximum or a minimum value. [2]