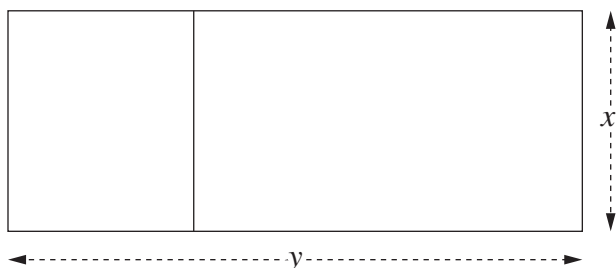**Question 19** (4 marks)

A fence is to be built around the outside of a rectangular paddock. An internal fence is also to be built.

The side lengths of the paddock are x metres and y metres, as shown in the diagram.

A total of 900 metres of fencing is to be used. Therefore $3x + 2y = 900$.

The area, A, in square metres, of the rectangular paddock is given by $A = 450x - 1.5x^2$. The graph of this equation is shown.
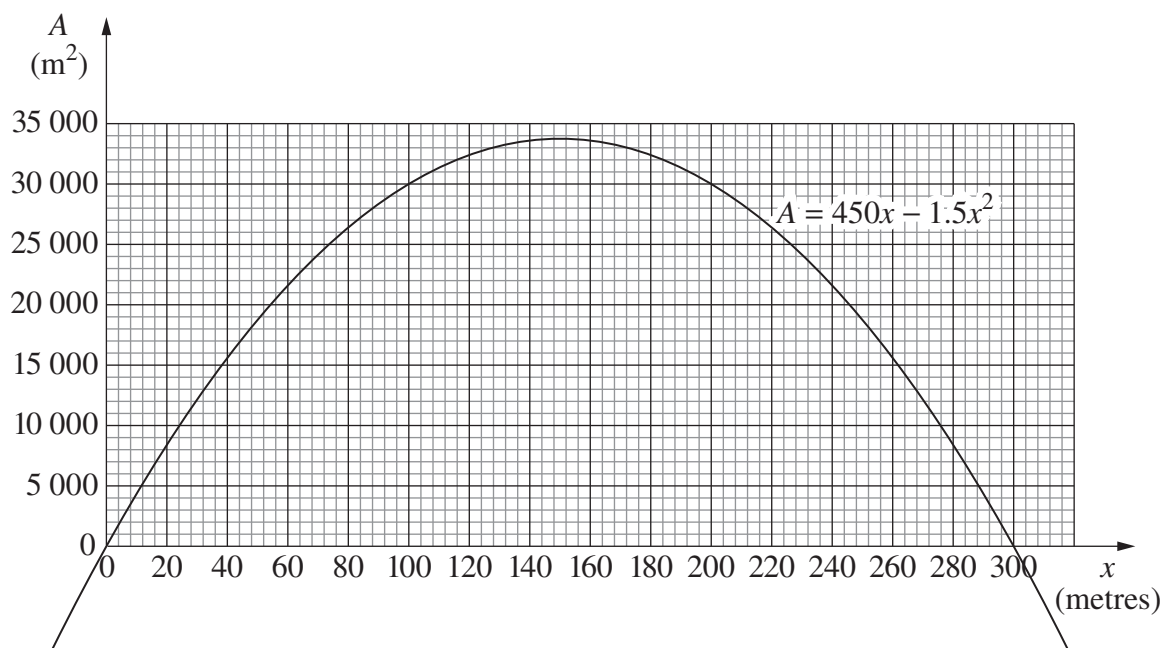
(a)   If the area of the paddock is 30 000 m^2, what is the largest possible value of x?   **1**

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Question 19 continues on page 15

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(b) Find the values of x and y so that the area of the paddock is as large as possible. **2**

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(c) Using your values from part (b), find the largest possible area of the paddock. **1**

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End of Question 19

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