

Subject 34

Function

Please don't write on the exam paper.

The lengths of the sides of a rectangular sheet of metal are 8 cm and 3 cm.

A square of side x cm is cut from each corner of the sheet and the remaining piece is folded to make an open box.

a) Show that the volume $V(x)$ of the box is given by $V(x) = 4x^3 - 22x^2 + 24x \text{ cm}^3$.

b) Find the value of x for which the volume of the box is a maximum. Calculate the maximum volume.

