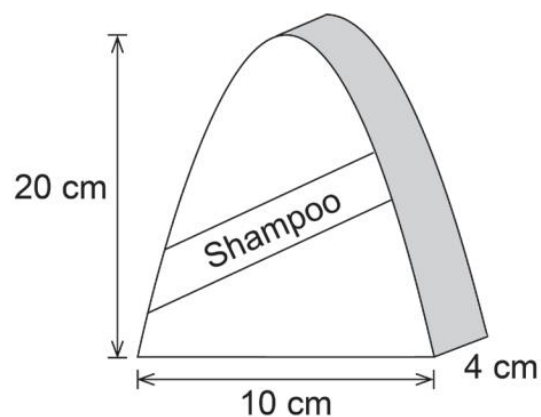
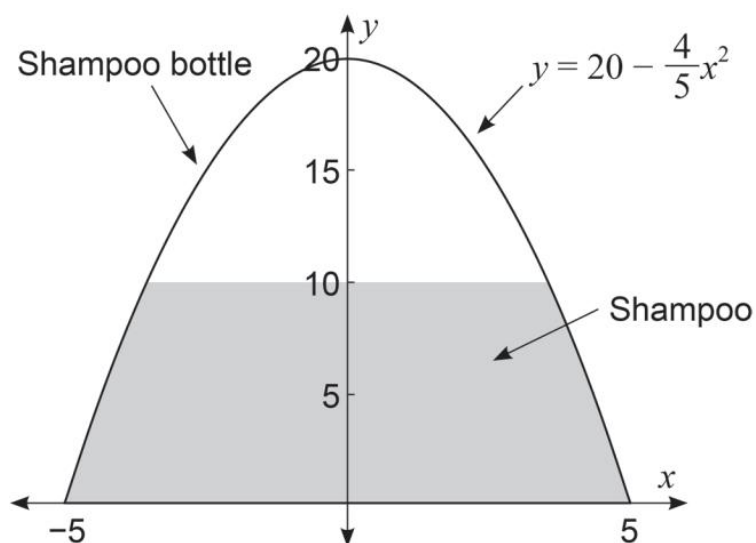


Question 16**(8 marks)**

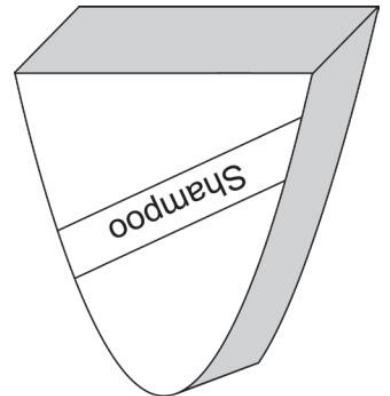
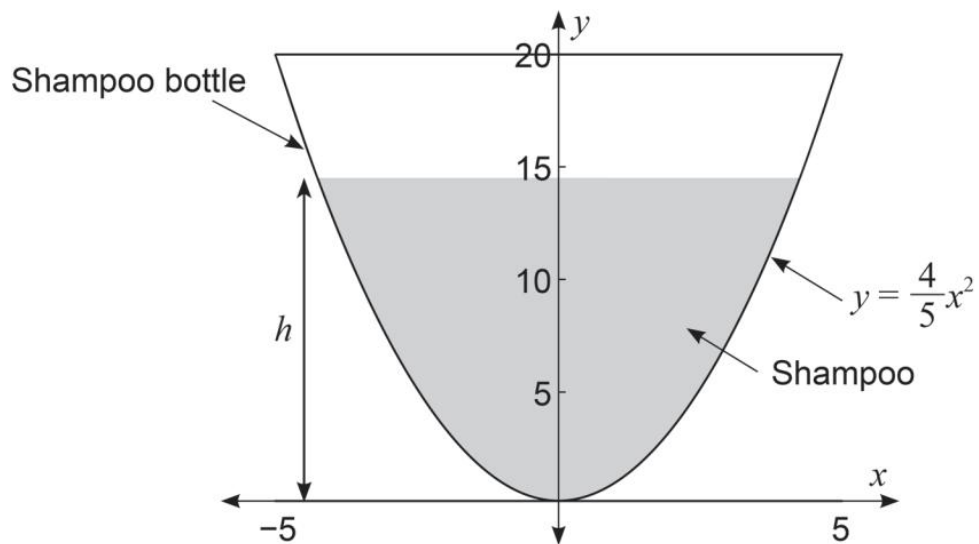
A partially filled shampoo bottle has a uniform parabolic cross-section as shown in the diagram below.



Both x and y are measured in centimetres. The width of the bottle perpendicular to the parabolic cross-section is 4 cm.

- (a) Calculate the volume V of shampoo in the bottle, if it is partially filled to a height of 10 cm. (4 marks)

The bottle is turned upside down and the entire volume of the shampoo allowed to settle, as shown in the diagram below.



(b) Determine the shampoo level h .

(4 marks)