

8 The volume of a solid circular cylinder of radius r cm is 250π cm³.

(i) Show that the total surface area, S cm², of the cylinder is given by

$$S = 2\pi r^2 + \frac{500\pi}{r}. \quad [2]$$

(ii) Given that r can vary, find the stationary value of S . [4]

(iii) Determine the nature of this stationary value. [2]