

8

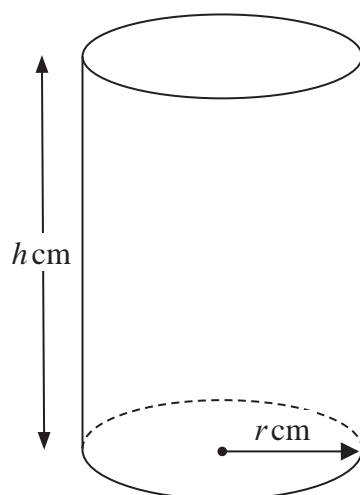


Diagram **NOT**
accurately drawn

Figure 1

A solid right circular cylinder has base radius r cm and height h cm as shown in Figure 1.

The cylinder has a volume of $90\pi\text{ cm}^3$ and a total surface area of $S\text{ cm}^2$

- (a) Show that $S = 2\pi r^2 + \frac{180\pi}{r}$

Given that r can vary,

- (b) use calculus to find, to 3 significant figures, the value of r for which S is a minimum, justifying that this value of r gives a minimum value of S

- (c) Find, to 3 significant figures, the minimum value of S



Question 8 continued

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Handwriting practice area with 20 horizontal dotted lines.



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Question 8 continued

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Question 8 continued

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(Total for Question 8 is 10 marks)



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