

The diagram shows a solid cone which has a slant height of $15\,\mathrm{cm}$ and a vertical height of $h\,\mathrm{cm}$.

| (i) | Show that the volume, $V \text{ cm}^3$, of the cone is given by $V = \frac{1}{3}\pi(225h - h^3)$. | [2] | | | | | | | |
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| | [The volume of a cone of radius r and vertical height h is $\frac{1}{3}\pi r^2 h$.] | | | | | | | | |
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| Given that h can vary, find the value of h for which V has a stationary value. all necessary working, the nature of this stationary value. | | | | | | | | | | |
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