

Solomon Practice Paper

Mechanics 3D

Time allowed: 90 minutes

Centre: www.CasperYC.club

Name:

Teacher:

Question	Points	Score
1	7	
2	7	
3	9	
4	10	
5	11	
6	13	
7	18	
Total:	75	

How I can achieve better:

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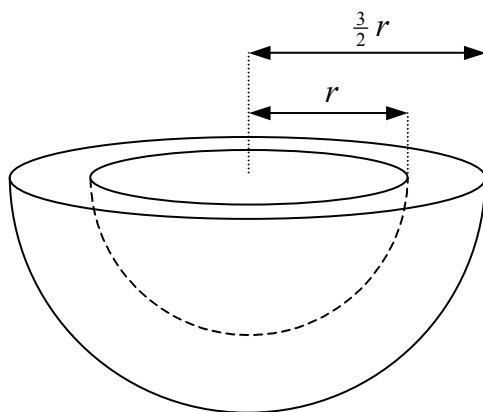


Last updated:

December 24, 2025

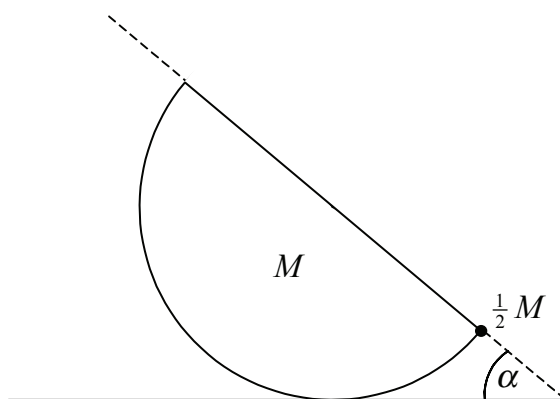


6. Figure shows a bowl formed by removing from a solid hemisphere of radius $\frac{3}{2}r$, a smaller hemisphere of radius r having the same axis of symmetry and the same plane face.



- (a) Show that the centre of mass of the bowl is a distance of $\frac{195}{304}r$ from its plane face. [7]

The bowl has mass M and is placed with its curved surface on a smooth horizontal plane. A stud of mass $\frac{1}{2}M$ is attached to the outer rim of the bowl.



When the bowl is in equilibrium its plane surface is inclined at an angle α to the horizontal as shown in Figure.

- (b) Find $\tan \alpha$. [6]

Total: 13

