

## STEP III, 2013 , Q9 EC

9. About a fifth attempted this, with the same success as question 7. Common errors were false attempts for the volume at the beginning using hemisphere and cones, and in the last part approximating  $x$  small rather than  $x - \frac{1}{2}R$  small. Many candidates were successful as far as the equilibrium but couldn't deal with the small oscillations successfully.



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