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2.

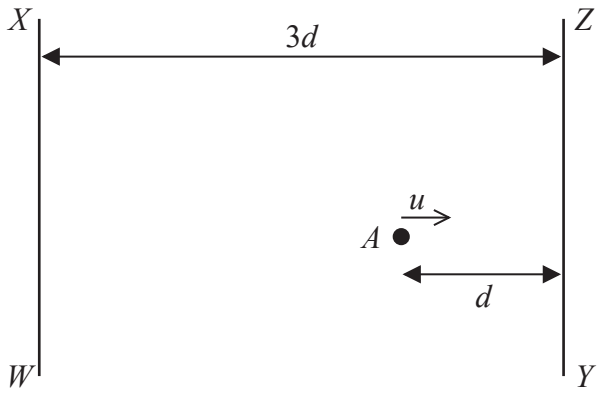


Figure 1

The point A lies on a smooth horizontal floor between two fixed smooth parallel vertical walls WX and YZ, as shown in the plan view in Figure 1.
The distance between WX and YZ is $3d$.
The distance of A from YZ is d.
A particle is projected from A along the floor with speed u towards YZ in a direction perpendicular to YZ.

The coefficient of restitution between the particle and each wall is $\frac{2}{3}$

The time taken for the particle to move from A, bounce off each wall once and return to A for the **first** time is T_1

(a) Find T_1 in terms of d and u.

(5)

The ball returns to A for the first time after bouncing off each wall once.
The further time taken for the particle to move from A, bounce off each wall once and return to A for the **second** time is T_2

(b) Find T_2 in terms of d and u.

(1)

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Question 2 continued

Q2

(Total 6 marks)