3.

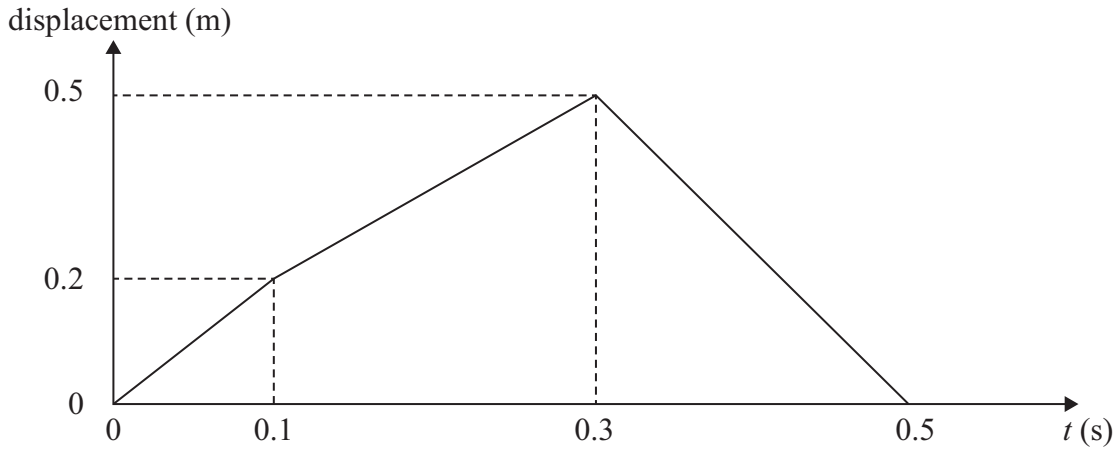


Figure 2

A small ball of mass 0.04 kg moves along a straight line on a pinball table.

At time $t = 0$, the ball passes through the point O

The displacement of the ball is measured from O

Figure 2 shows the **displacement-time** graph for the motion of the ball from $t = 0$ to $t = 0.5$

(a) State the displacement of the ball from O at $t = 0.5$

(1)

(b) Find the total distance moved by the ball between $t = 0$ and $t = 0.5$

(1)

(c) Sketch a velocity-time graph for the motion of the ball from $t = 0$ to $t = 0.5$

(4)

(d) Find the magnitude of the impulse exerted on the ball at $t = 0.3$, stating the units of your answer.

(4)

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Question 3 continued

(Total for Question 3 is 10 marks)