

The displacement of a particle moving in a straight line is s metres at time t seconds after leaving a fixed point O. The particle starts from rest and passes through points P, Q and R, at times t = 5, t = 10 and t = 15 respectively, and returns to O at time t = 20. The distances OP, OQ and OR are 50 m, 150 m and 200 m respectively.

The diagram shows a displacement-time graph which models the motion of the particle from t = 0 to t = 20. The graph consists of two curved segments AB and CD and two straight line segments BC and DE.

| Find the speed of the particle between $t = 3$ and $t = 10$. | [1] |
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| (b) | Find the acceleration of the particle between $t = 0$ and $t = 5$, given that it is constant. | [2] |
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| (c) | Find the average speed of the particle during its motion. | [2] |
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