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2. A small ball is thrown vertically upwards with speed $14.7\,\text{m}\,\text{s}^{-1}$ from a point that is 19.6 m above horizontal ground. The ball is modelled as a particle moving freely under gravity.

Find

(a) the total time from when the ball is thrown to when it first hits the ground,

(4)

(b) the speed of the ball immediately before it first hits the ground,

(3)

(c) the total distance travelled by the ball from when it is thrown to when it first hits the ground.

(4)

(d) Sketch a velocity-time graph for the motion of the ball from when it is thrown to when it first hits the ground.

State the coordinates of the start point and the coordinates of the end point of your graph.

(3)

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Q2