3. A van travels with constant acceleration along a straight horizontal road.

The van passes a point A with speed $u\,\text{m s}^{-1}$ and 20 seconds later passes a point B with speed $28\,\text{m s}^{-1}$

The distance AB is 400 m.

(a) Show that $u = 12$

(2)

(b) Find the time taken for the van to travel from A to the midpoint of AB.

(5)

The van has mass 1200 kg.

During its motion the van experiences a constant resistive force of magnitude 260 N

(c) Find the magnitude of the driving force exerted by the engine of the van as it travels from A to B.

(3)

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Question 3 continued

(Total for Question 3 is 10 marks)