

Answer on Question #65692, Physics | Mechanics | Relativity

Question

A truck of mass 2000 kg moving on a highway experiences an average frictional force of 800 N. If its speed increases from 25 ms^{-1} to 35 ms^{-1} over a distance of 500 m, what is the force generated by the truck.

Solution

$$ma = F_t - F_f$$

$$F_t = ma + F_f$$

$$a = \frac{V_2^2 - V_1^2}{2S} = \frac{35^2 - 25^2}{2 \cdot 500} = 0.6 \text{ ms}^{-2}$$

$$F_t = ma + F_f = 2000 \cdot 0.6 + 800 = 2000 \text{ N}$$

Answer 2000N

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