

Assignment 1

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Download all latex codes from

<https://github.com/srikan-p/EE3900/tree/main/Assignment1>

PROBLEM

(Vectors 2.17c) Give the magnitude and direction of the net force acting on a stone of mass 0.1 kg, just after it dropped from the window of a train accelerating with $1ms^{-2}$.

SOLUTION

Let the train move in \hat{i} direction. Acceleration of train is a .

F' is the force due to acceleration of train.

$$a = 0.1\hat{i} \quad (0.0.1)$$

$$F' = ma \quad (0.0.2)$$

$$= 0.1\hat{i} \quad (0.0.3)$$

Just after dropping,

$$F' = 0 \quad (0.0.4)$$

Net force on stone is F .

$$F = mg \quad (0.0.5)$$

$$F = -1\hat{j} \quad (0.0.6)$$

The magnitude of the net force is 1 N and it acts vertically downwards.