

8 In this question $\begin{pmatrix} 1 \\ 0 \end{pmatrix}$ and $\begin{pmatrix} 0 \\ 1 \end{pmatrix}$ denote unit vectors which are horizontal and vertically upwards respectively.

A particle of mass 5 kg, initially at rest at the point with position vector $\begin{pmatrix} 2 \\ 45 \end{pmatrix}$ m, is acted on by gravity and also by two forces $\begin{pmatrix} 15 \\ -8 \end{pmatrix}$ N and $\begin{pmatrix} -7 \\ -2 \end{pmatrix}$ N.

(i) Find the acceleration vector of the particle. [3]

(ii) Find the position vector of the particle after 10 seconds. [3]