

2. A particle, P , moves with constant acceleration $(2\mathbf{i} - 3\mathbf{j})\text{ m s}^{-2}$

At time $t = 0$, the particle is at the point A and is moving with velocity $(-\mathbf{i} + 4\mathbf{j})\text{ m s}^{-1}$

At time $t = T$ seconds, P is moving in the direction of vector $(3\mathbf{i} - 4\mathbf{j})$

(a) Find the value of T .

(4)

At time $t = 4$ seconds, P is at the point B .

(b) Find the distance AB .

(4)