2.   **In this question you must show all stages of your working.**

            Solutions relying on calculator technology are not acceptable.

A particle is moving along a straight line.

At time t seconds, $t > 0$, the velocity of the particle is $v\,\mathrm{m\,s^{-1}}$, where

$$v = 2t - 7\sqrt{t} + 6$$

(a) Find the acceleration of the particle when $t = 4$

(3)

When $t = 1$ the particle is at the point X.

When $t = 2$ the particle is at the point Y.

Given that the particle does not come to instantaneous rest in the interval $1 < t < 2$

(b) show that $XY = \dfrac{1}{3}\left(41 - 28\sqrt{2}\right)$ metres.

(4)