12 A particle moves in a straight line such that its displacement, s metres, from a fixed point O at time t seconds, is given by $s = 2 + t - 2\cos t$, for $t \geqslant 0$.

(a) Find the displacement of the particle from O at the time when it first comes to instantaneous rest. [5]

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(b) Find the time when the particle next comes to rest. [1]

(c) Find the distance travelled by the particle for $0 \leqslant t \leqslant \frac{3\pi}{2}$. [2]

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