## 11D Integrating between $x, v, a$

1. A particle is moving on the $x$-axis. At time $t=0$, the particle is at the point where $x=5$. The velocity of the particle at time $t$ seconds $(t \geq 0)$ is $\left(6 t-t^{2}\right) m s^{-1}$. Find:
a) An expression for the displacement of the particle from O at time t seconds
b) The distance of the particle from its starting point when $t=6$
2. A particle travels in a straight line. After $t$ seconds its velocity, $v m s^{-1}$, is given by $v=5-$ $3 t^{2}, \quad t \geq 0$. Find the distance travelled by the particle in the third second of its motion.
