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