**Answer on question #60816, Physics / Other**

**Question** The position of a particle moving in a straight line is given by x = 3 + 5t + 2t2, where x is in metre and time is in second. Find the values of the following physical quantities for the particle at t = 3s. (i) position (ii) displacement (iii) velocity (iv) acceleration

**Solution** (i)

$$x = 3 + 5t + 2t^2 = 3 + 5 \cdot 3 + 2 \cdot 3^2 = 36\,m$$

(ii) In this case displacement is equal to position, 36 m.
(iii)

$$v = x'(t) = 5 + 4t = 5 + 4 \cdot 3 = 17\,m/s$$

(iv)

$$a = v'(t) = 4\,m/s^2$$