Rectilinear Kinematics *(Variable Acceleration)*
Home Work 2-1

Q1) The position of the particle is given by $S = (2t^2 - 8t + 6)$ m, where t is in seconds. Determine the time when the velocity of the particle is zero, and the total distance traveled by the particle when $t = 3$ s.

Q2) A particle travels along a straight line with an acceleration of $a = (10 - 0.2s)$ m/s^2, where s is measured in meters. Determine the velocity of the particle when $S = 10$ m if $v = 5$ m/s at $S = 0$

Q3) A particle travels along a straight line with a velocity of $v = (4t - 3t^2)$ m/s, where t is in seconds. Determine the position of the particle when $t = 4$ s. $S = 0$ when $t = 0$.

Q4) A particle travels along a straight line with a velocity of $v = (20 - 0.05S^2)$ m/s, where S is in meters. Determine the acceleration of the particle at $S = 15$ m.

Q5) A particle moves along a straight line is given by $S = 2t^3 - 24t + 6$, where S is measured in meters. Determine (a) the time required for the particle to reach a velocity of 72 m/s (b) the acceleration of the particle when $v = 30$ m/s, and (c) the net displacement Vent of the particle during the interval from $t = 1$ s to $t = 4$ s.