KINEMATICS

Motion generally can be classified into statics and dynamics

Under kinematics we have concepts like velocity, displacement and acceleration. Kinetics is the study of the relation which exists between force and motion.

Rectilinear motion: This is also called linear motion. It is the motion of a body on a straight line

Curvilinear motion: This is the motion along a curved path

Average velocity

Instantaneous velocity

Acceleration as a function of time

The position of a particle which moves along a straight line is defined by the relations

where x is expressed in meters and t in seconds

Determine:

a. The time at which velocity will be 0

b. The position and distance traveled by the particle at that time

c. The acceleration of the particle at that time

d. The distance traveled by the particle from t=4 to t=6s

The motion of a particle is defined by the relation

x = 12{t rsup 3} – 18{t rsup 2} + 2t + 5 where x and t are expressed in meters and seconds respectively. Determine the position and the velocity when the acceleration of the particle is equal to zero.

The motion of a particle