AI Response:

Kinematics is the branch of physics that deals with the motion of objects without

1. **Displacement (s):** Displacement is a vector quantity that refers to the chan

2. **Distance:** Distance is a scalar quantity that refers to the total path length tr

3. **Velocity (v):** Velocity is a vector quantity that describes the rate of change

   $$
   v = \frac{\Delta s}{\Delta t}
   $$

   where Δs is the change in displacement and Δt is the chang

4. **Acceleration (a):** Acceleration is a vector quantity that describes the rate o

   $$
   a = \frac{\Delta v}{\Delta t}
   $$

5. **Equations of Motion (for uniformly accelerated motion):**
   When an object is moving with constant acceleration, the following equations c

   1. $v = u + at$

   2. $s = ut + \frac{1}{2}at^2$

   3. $v^2 = u^2 + 2as$

   Here, u is the initial velocity, v is the final velocity, a is the accelera

6. **Free Fall:** When an object is in free fall near the Earth's surface, it experien

7. **Projectile Motion:** This refers to the motion of an object that is launched int

Understanding these concepts allows for the analysis and prediction of the motio