AI Response:

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

Key Terms:
1. **Displacement (s)**: The change in position of an object. It is a vector quantit
2. **Distance**: The total path length traveled by an object, regardless of directio
3. **Velocity (v)**: The rate of change of displacement. It is also a vector quantity
   $$
   v = \frac{displacement}{time} = \frac{\Delta s}{\Delta t}
   $$
4. **Speed**: The rate of change of distance, usually expressed as a scalar. It do
5. **Acceleration (a)**: The rate of change of velocity. It is a vector quantity defin
   $$
   a = \frac{change\ in\ velocity}{time} = \frac{\Delta v}{\Delta t}
   $$

Kinematic Equations:
In uniformly accelerated motion (constant acceleration), the following equations c

1. **First Equation of Motion**:
   $$
   v = u + at
   $$
   where:
   - v = final velocity
   - u = initial velocity
   - a = acceleration
   - t = time

2. **Second Equation of Motion**:
   $$
   s = ut + \frac{1}{2}at^2
   $$
   where:
   - s = displacement

3. **Third Equation of Motion**:
   $$
   v^2 = u^2 + 2as
   $$

Graphical Representation:
Kinematics can also be studied graphically using position-time, velocity-time, and
- A **position-time graph** shows how position changes over time.
- A **velocity-time graph** illustrates the velocity of an object over time.