AI Response:

Kinematics is a branch of classical mechanics that focuses on the motion of obje

Key Concepts:

1. **Displacement (s)**: The change in position of an object. It is a vector qu

2. **Distance**: The total path length traveled by an object, regardless of directio

3. **Velocity (v)**: The rate of change of displacement with respect to time. I
   $$
   v = \frac{ds}{dt}
   $$

4. **Speed**: The rate of change of distance with respect to time. It is a scalar q

5. **Acceleration (a)**: The rate of change of velocity with respect to time. It
   $$
   a = \frac{dv}{dt}
   $$

6. **Uniform Motion**: When an object moves at a constant speed in a straight li

7. **Uniformly Accelerated Motion**: When an object experiences a constant acc

Equations of Motion (for Uniformly Accelerated Motion):

For an object with uniform acceleration, the following equations describe its moti

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 is the displacement.