hello

matt baird

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Chapter 1

1.1 units standards and the si system

theories are created to explain observations and then tested basd on their predictions

Chapter 2

Describing Motion: Kinematics in one dimension

2.1 referance frames and displacement

- Any mesurement of position, distance, or speed must be made with respect to a referance frame.
- distinction between distance and displacement.
- displacement is how fare the object is from its starting point, reguardless of how it got there
- Distance traveled is mesureed along the actual path
- Mathmatically we wil represent position by the cordanite x
- The displacement is written $\triangle x = x_2 - x_1$

2.2 Average Velocity

- $averagespeed = \frac{distance\ traveled}{time\ elapsed}$
- $averagevelocity = \frac{displacement}{time\ elapsed}$
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2.3 Instatinius velocity

The instatinius velocity is the average velocity, in the limit as the time intervl becomes infintesimall short
average velocity $v = \frac{\triangle x}{\triangle t}$
instatinius velocity $v = \lim_{\triangle t \to 0} \frac{\triangle x}{\triangle t}$
average acceleration $= \frac{change\ of\ velocity}{time\ elapsed}$

2.4 Acceleration

- Acceleration is a vector, although in one dimensional motion we only need the sign.

2.5 Motion at constant acceleration

- the average velocity of an object during a time interval t is
  $v = \frac{x - x_0}{t - t_0} = \frac{x - x_0}{t}$
- the acceleration assumed constant is $a = \frac{v - v_0}{t}$
- Re-arrange: $v = v_0 + a * t$
- Supose the partical starts at some position x_0
- If we knew average velocity v, we could calculate $x = x_0 + v * t$
- now for constant acc the avg velovity is $v = \frac{v_0 + v}{2}$
- $x = x_0 + v_0 t + \frac{1}{2} a t^2$ formula for constant acceleration
- constant acc problems know them
  $v = v_0 + at$
  $x = x_0 + v_0 t + \frac{1}{2} a t^2$
  $v^2 = v_0^2 + 2a(x - x_0)$
  $v = \frac{v + v_0}{2}$

2.6 solving problems

- ex:

2.7 falling objects

- all object fall about the same acceleration due to graviy ignoring air resistace and other friction forces
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Chapter 3

first test

3.1

- airplane