

PHYSICS 160 READING

ASSIGNMENT FOR JANUARY 23

SECTIONS 2.2 - 2.3

2.2 - Instantaneous Velocity

- Instantaneous Velocity, v - velocity at a single instant of time, *i.e.*, the velocity at $t = 3.56$ s.
- Again, there is a difference between speed and velocity. Speed is how fast. Velocity is how fast and the direction the particle is heading towards.
- If you know your calculus then you can call instantaneous velocity the time derivative of position. If not (and what I'll be stressing in lecture), instantaneous velocity is the slope of the position versus time graph.

2.3 - Average and Instantaneous Acceleration

- Acceleration - the rate at which *velocity* changes. Unit: $\frac{m/s}{s}$ (meters per second per second) which is always written m/s^2 (meters per second squared).
- The instantaneous acceleration is the time derivative of velocity or, equivalently, the slope of the velocity versus time graph.
- The sign of acceleration is tricky. Make sure to check out table 2.3.