Engineering Physics I

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January 24, 2017

Significant Figures

When multiplying or dividing, the result is as precise as the least precise input to the number of digits.
Example: $54.3 * 6.8991 = 374.62113$, truncated to 374 or rounded to 375.

When adding or subtracting, the result is as precise as the least precise input to the nuber of digits post decimal place.
Example: $10.65 + 3.0 = 13.65$, truncated to 13.6 or rounded to 13.7.

As a general rule (from the professor), round up down to the nearset even number, as always rounding up will accumulate more error.

Variables of Movement and Position

1. Position: Location in space with respect to another object or coordinate system.
   x, y, z
2. Displacement: Difference in position at two different times.
   $\Delta x, \Delta y, \Delta z, \Delta x = x_2 - X_1$
3. Average Velocity: Displacement divided by time.
   $v_{avg}, v_{avg} = \frac{\Delta x}{\Delta t}$
4. Speed: Total distance divided by time.
   $s, s \equiv \frac{d}{t}$
5. Instantanious Velocity: Velocity measured at a single time.
   $v, v = \lim_{t \to a} \frac{\Delta x}{\Delta t} = \lim_{t \to a} \frac{x_2 - x_1}{t_2 - t_1}$

Motion at Constant Velocity

$x = x_0 + vt$ The following computes a new position of x according to an object's initial position (x_0), velocity (v) and the given time passed (t). The equation is a slope-intercept formula.