Information for the Quiz on Ch. 2

Fundamental Concepts

Things you must know:

(1) Definition of and approximation for average velocity (and the position update formula)

(2) Definition of momentum

\[ \gamma = \frac{1}{\sqrt{1 - (\frac{v}{c})^2}} \]

(3) The Momentum Principle (and the momentum update formula)

Specific Results

Projectile Motion:

\[ x_f = x_i + v_{xi} \Delta t \]
\[ y_f = y_i + v_{yi} \Delta t - \frac{1}{2} g(\Delta t)^2 \]
\[ v_{xf} = v_{xi} \]
\[ v_{yf} = v_{yi} - g\Delta t \]

\[ |F_{\text{grav}}| \approx mg \text{ near Earth's surface} \]
\[ |F_{\text{spring}}| = k_s |s| \]

Physical Constants

\[ c = 3 \times 10^8 \text{ m/s} \]
\[ m_{\text{proton}} = 1.7 \times 10^{-27} \text{ kg} \]
\[ g = 9.8 \text{ m/s}^2 \]
\[ m_{\text{electron}} = 9 \times 10^{-31} \text{ kg} \]