

Grade 12 Physics

SPH4U

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November 6, 2025

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Chapter 3

Unit 2: Energy and Momentum

3.1 HEAD-ON Collisions

3.1.1 Equations

Under this section, I will derive Equations that is useful to solve for final velocity for each object when you have initial velocity for a HEAD-ON Collision question

The equation for \vec{v}_A'

$$\vec{v}_A' = \frac{m_A - m_B}{m_A + m_B} * \vec{v}_A \quad (3.1)$$

The equation for \vec{v}_B'

$$\vec{v}_B' = \frac{2m_A}{m_A + m_B} * \vec{v}_A \quad (3.2)$$

For questions which \vec{v}_B is not zero, we need change Frame of Reference to \vec{v}_B in order to solve the question. And change the FOR back later.