

## 1 Kinematics

### 1.1 Scalar Product

$$\vec{A} \cdot \vec{B} = AB \cos \theta$$

$$\vec{A} \cdot \vec{B} = A_x B_x + A_y B_y + A_z B_z$$

### 1.2 Cross Product

$$\vec{A} \times \vec{B} = -\vec{B} \times \vec{A} = AB \sin \theta$$

$$\vec{A} \times \vec{B} = (A_y B_z - A_z B_y) \hat{i} + (A_z B_x - A_x B_z) \hat{j} + (A_x B_y - A_y B_x) \hat{k}$$

Use right hand rule (point fingers along the first vector, curl hand in towards next vector).

- 1.3 1D/2D Kinematics
- 1.4 Relative Motion
- 2 Newton's Laws of Motion
- 3 Work Power Energy
  - 3.1 Energy
  - 3.2 Work
  - 3.3 Power
- 4 Linear Momentum/Collisions
  - 4.1 Momentum
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  - 4.3 Centre of Mass
- 5 Rotational Motion
  - 5.1 Rotational Kinematics
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- 6 Angular Momentum
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- A Terms/Definitions
- B Constants
- C Conversions
- D Orders of Magnitude
- E Trigonometry
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