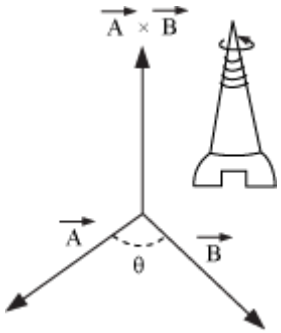
- Scalar product of a vector with itself gives the square of its magnitude.
- Dot Product of two vectors $\vec{A}$ and $\vec{B}$ in Cartesian Coordinates is

  $\vec{A}.\vec{B} = A_xB_x + A_yB_y + A_zB_z$

- The magnitude of the vector product of two vectors $\vec{A}$ and $\vec{B}$ is defined as the product of the magnitude of the vectors $\vec{A}$ and $\vec{B}$ and sine of the smaller angle between them.



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

- The cross product of the two vectors is at right angles to both the vectors and points in the direction in which a right-handed screw will advance.
- Properties of vector product:
  - The cross product of a vector with itself is a null vector.
  - The cross product of two vectors does not obey commutative law. That is,

    $\vec{A} \times \vec{B} \neq \vec{B} \times \vec{A}$
  - The cross product of vectors obeys the distributive law. That is,

    $\vec{A} \times (\vec{B} + \vec{C}) = \vec{A} \times \vec{B} + \vec{A} \times \vec{C}$

- If the vectors A→A→ and B→B→ represent the two adjacent sides of a parallelogram, the magnitude of cross product of A→A→ and B→B→ will represent the area of the parallelogram.