- Scalar Projection of $\vec{a}$ onto $\vec{b}$: $\dfrac{\vec{a}.\vec{b}}{|\vec{b}|}$.
- Vector Projection of $\vec{a}$ onto $\vec{b}$: $\left(\dfrac{\vec{a}.\vec{b}}{|\vec{b}|^2}\right)\vec{b}$
- Cross Product: $\vec{a}\times\vec{b} = \begin{vmatrix} \hat{i} & \hat{j} & \hat{k} \\ a_x & a_y & a_z \\ b_x & b_y & b_z \end{vmatrix}$ and $|\vec{a}\times\vec{b} = |\vec{a}||\vec{b}|\sin\theta$
- Direction Cosines: $\cos\alpha = \dfrac{a_x}{|\vec{a}|}$, $\cos\beta = \dfrac{a_y}{|\vec{a}|}$, $\cos\gamma = \dfrac{a_z}{|\vec{a}|}$
- Equation of Line passing through (x_0, y_0, z_0) and parallel to the vector $a\,\hat{i} + b\,\hat{j} + c\,\hat{k}$ is given by $\dfrac{x-x_0}{a} = \dfrac{y-y_0}{b} = \dfrac{z-z_0}{c}$
- Equation of plane passing through (x_0, y_0, z_0) and having normal vector $a\,\hat{i} + b\,\hat{j} + c\,\hat{k}$ is given by $ax + by + cz = ax_0 + by_0 + cz_0$.
- Cylinderical Coordinate (r, θ, z)
  - $r = \sqrt{x^2 + y^2}$
  - $\theta = \tan^{-1}\left(\dfrac{y}{x}\right)$
  - $x = r\cos\theta$
  - $y = r\sin\theta$
  - $z = z$
- Spherical Coordinates (r, θ, ϕ)
  - $\rho = \sqrt{x^2 + y^2 + z^2}$
  - $\theta = \tan^{-1}\left(\dfrac{y}{x}\right)$
  - $\phi = \tan^{-1}\left(\dfrac{x^2 + y^2}{z}\right)$
  - $x = \rho\cos\theta\sin\phi$
  - $y = \rho\sin\theta\sin\phi$
  - $z = \rho\cos\phi$