1 | If you have two vectors $\vec{A} = (A_x, A_y, A_z)$ and $\vec{B} = (B_x, B_y, B_z)$, then the angle between the two is defined as:

$$\theta = \arccos(\frac{\vec{A} \cdot \vec{B}}{|\vec{A}||\vec{B}|})$$

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

this is because:

$$\vec{A} \cdot \vec{B} = |\vec{A}||\vec{B}| \cos(\theta) = A_x B_x + A_y B_y + A_z B_z$$

2 | When the dot product is zero:

the two vectors are perpendicular