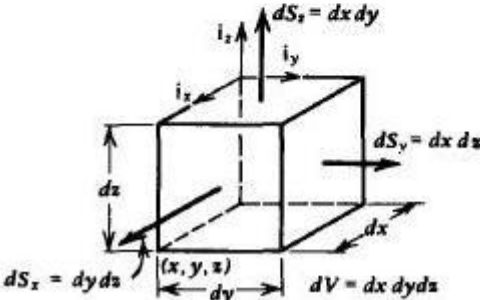
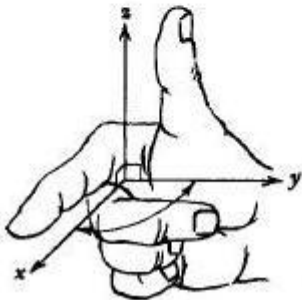
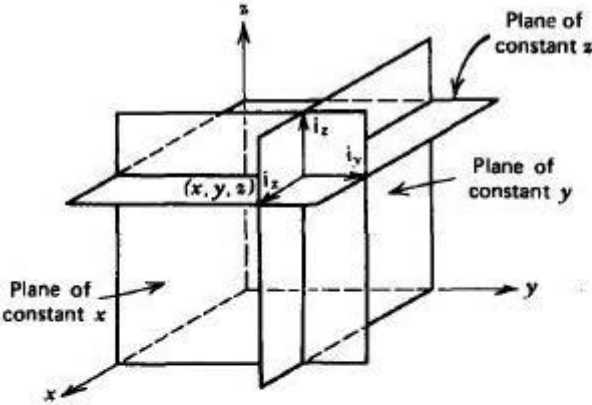
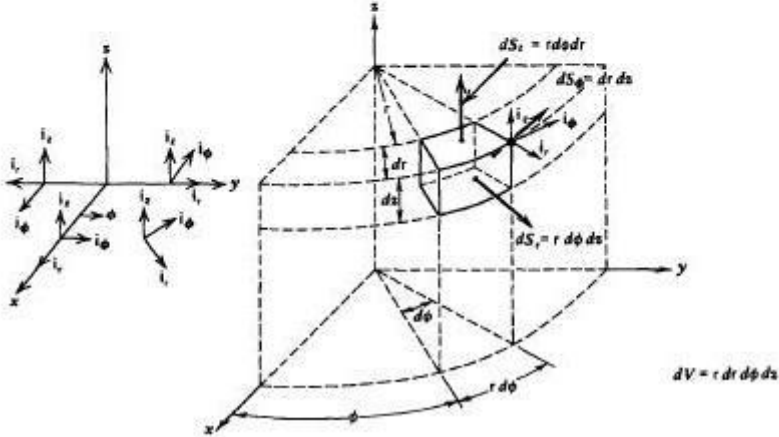
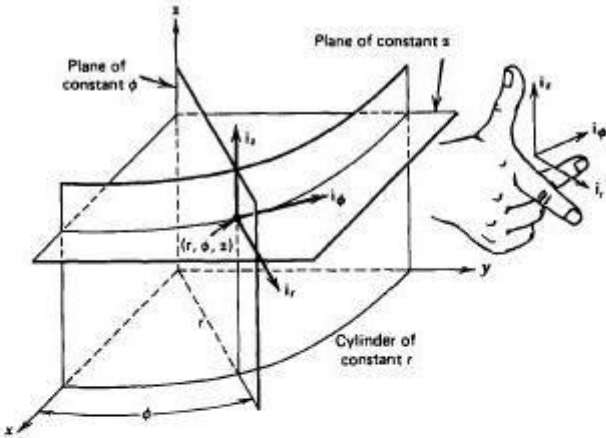


# KOORDİNAT SİSTEMLERİ

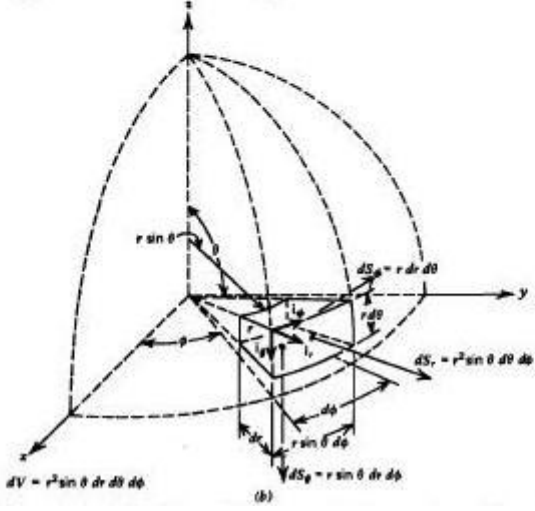
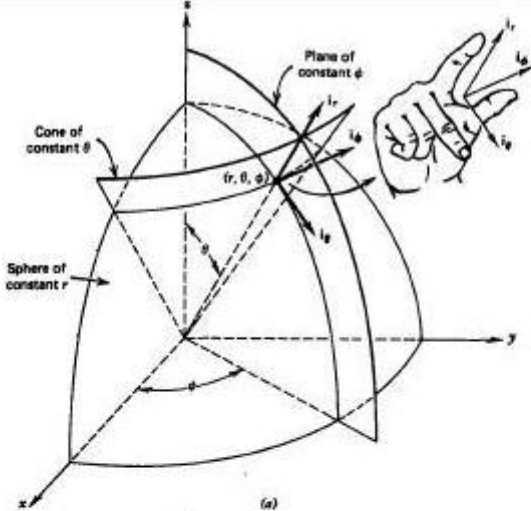
## Kartezyen Koordinat Sistemi



# Silindirik Koordinat Sistemi



# Küresel Koordinat Sistemi



**Geometric relations between coordinates and unit vectors for Cartesian, cylindrical, and spherical coordinate systems\***

<b>CARTESIAN</b>	<b>CYLINDRICAL</b>	<b>SPHERICAL</b>
$x$	$= r \cos \phi$	$= r \sin \theta \cos \phi$
$y$	$= r \sin \phi$	$= r \sin \theta \sin \phi$
$z$	$= z$	$= r \cos \theta$
$i_x$	$= \cos \phi i_r - \sin \phi i_\phi$	$= \sin \theta \cos \phi i_r + \cos \theta \cos \phi i_\theta - \sin \phi i_\phi$
$i_y$	$= \sin \phi i_r + \cos \phi i_\phi$	$= \sin \theta \sin \phi i_r + \cos \theta \sin \phi i_\theta + \cos \phi i_\phi$
$i_z$	$= i_z$	$= \cos \theta i_r - \sin \theta i_\theta$
<b>CYLINDRICAL</b>	<b>CARTESIAN</b>	<b>SPHERICAL</b>
$r$	$= \sqrt{x^2 + y^2}$	$= r \sin \theta$
$\phi$	$= \tan^{-1} \frac{y}{x}$	$= \phi$
$z$	$= z$	$= r \cos \theta$
$i_r$	$= \cos \phi i_x + \sin \phi i_y$	$= \sin \theta i_r + \cos \theta i_\theta$
$i_\phi$	$= -\sin \phi i_x + \cos \phi i_y$	$= i_\phi$
$i_z$	$= i_z$	$= \cos \theta i_r - \sin \theta i_\theta$
<b>SPHERICAL</b>	<b>CARTESIAN</b>	<b>CYLINDRICAL</b>
$r$	$= \sqrt{x^2 + y^2 + z^2}$	$= \sqrt{r^2 + z^2}$
$\theta$	$= \cos^{-1} \frac{z}{\sqrt{x^2 + y^2 + z^2}}$	$= \cos^{-1} \frac{z}{\sqrt{r^2 + z^2}}$
$\phi$	$= \cot^{-1} \frac{x}{y}$	$= \phi$
$i_r$	$= \sin \theta \cos \phi i_x + \sin \theta \sin \phi i_y + \cos \theta i_z$	$= \sin \theta i_r + \cos \theta i_\theta$
$i_\theta$	$= \cos \theta \cos \phi i_x + \cos \theta \sin \phi i_y - \sin \theta i_z$	$= \cos \theta i_r - \sin \theta i_\theta$
$i_\phi$	$= -\sin \phi i_x + \cos \phi i_y$	$= i_\phi$