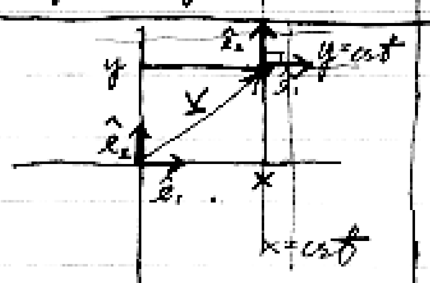
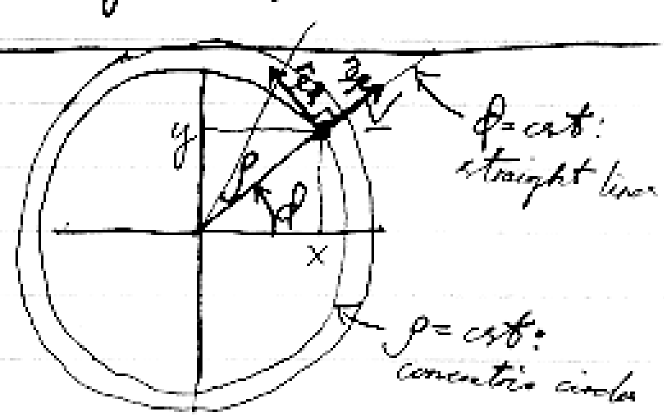
Simple example in 2D

	RECTANGULAR CARTESIAN	CIRCULAR POLAR
q_1	x	ρ
q_2	y	ϕ
$x(q_1, q_2)$	$x = x$	$x = \rho\cos\phi$
$y(q_1, q_2)$	$y = y$	$y = \rho\sin\phi$
$q_1(x,y)$	$x = x$	$\rho = \sqrt{x^2+y^2}$
$q_2(x,y)$	$y = y$	$\phi = \mathrm{arctg}\left(\frac{y}{x}\right)$



Point $\underline{V}$ is at the intersection of the $\perp$ lines $x = cst$ and $y = cst$

The unit vectors are indep. of $\underline{V}$!



Point $\underline{V}$ is at the intersection of the circle $\rho = cst$ and the radial ray $\phi = cst$. The circles and the rays are orthogonal (perpendicular).

The unit vectors depend on $\underline{V}$!

THE 3 MOST ~~IMPORTANT~~ COMMON EXAMPLES in 3D

	RECTANGULAR CARTESIAN	CIRCULAR CYLINDRICAL	SPHERICAL POLAR
q_1	x	ρ	r
q_2	y	ϕ	ϕ
q_3	z	z	ϑ
$x(q_1,q_2,q_3)$	$x=q_1$	$x=\rho\cos\phi$	$x=r\sin\vartheta\cos\phi$
$y(q_1,q_2,q_3)$	$y=q_2$	$y=\rho\sin\phi$	$y=r\sin\vartheta\sin\phi$
$z(q_1,q_2,q_3)$	$z=q_3$	$z=q_3$	$z=r\cos\vartheta$
$q_1(x,y,z)$	$q_1=x$	$\rho=\sqrt{x^2+y^2}$	$r=\sqrt{x^2+y^2+z^2}$
$q_2(x,y,z)$	$q_2=y$	$\phi=\mathrm{arc\,tg}\left(\frac{y}{x}\right)$	$\phi=\mathrm{arc\,tg}\left(\frac{y}{x}\right)$
$q_3(x,y,z)$	$q_3=z$	$q_3=z$	$\vartheta=\mathrm{arc\,tg}\left(\frac{\sqrt{x^2+y^2}}{z}\right)$