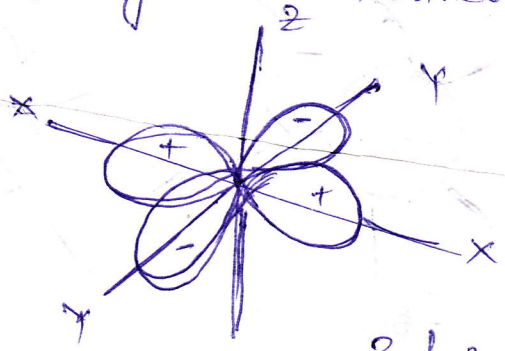
The $d_{x^2-y^2}$ is also four-lobed and it lies in the xy plane with the lobes ~~diagonally between corresponding~~ projected along the axial directions.



Z $3d_{x^2-y^2}$

Apparently, we should have two other four-lobed spherical harmonics namely, $d_{z^2-y^2}$ and $d_{z^2-x^2}$. But unfortunately they have no physical reality. However it is convenient to think the d_{z^2} orbital as a linear combination of the two nonexistent orbitals $d_{z^2-y^2}$ and $d_{z^2-x^2}$. Thus both the properties of $d_{z^2-x^2}$ and $d_{z^2-y^2}$ are fused in d_{z^2} orbital. As both the precursor orbitals have high electron densities along the z axis the product orbital d_{z^2} is having a large amount of electron density along the z-axis. The $d_{z^2-x^2}$ orbital has one component getting maximized along the x-axis and similarly the $d_{z^2-y^2}$ has one component getting maximised along the y-axis. This is why the resultant d_{z^2} has a component in the xy-plane. This component in the xy plane is often referred to as doughnut or belly ~~band~~ band.