

Notes for lecture 9

1. Date: June 9th.
2. The lecture (see SampleProblems9.pdf and Sample Problems in Chapter3.5.pdf files) consider dynamics (motion equations) in different coordinate systems (rectangular and curvilinear coordinates) that we already learnt. The key points are as follows.
 - a. Free-body diagram. If motion of a particle is physically constrained (from being free), the constraints are replaced by reaction forces. Having done that, we then consider the particle as if it were free and moved by the active (such as gravity or other explicitly given force) and reactive forces.
 - b. Forces in curvilinear coordinates. When using curvilinear coordinates force vectors shall be represented with respect to moving (changing) coordinate system ($\mathbf{e}_t, \mathbf{e}_n$ for path coordinates, $\mathbf{e}_r, \mathbf{e}_\theta$ for polar coordinates, $\mathbf{e}_r, \mathbf{e}_\theta, \mathbf{e}_z$ for cylindrical coordinates, $\mathbf{e}_r, \mathbf{e}_\theta, \mathbf{e}_\phi$ for spherical coordinates).
3. The deadline for submitting assignment (see Assignment9.pdf) is June 16.