Return test 1-6 at class end.

TODAY'S MENU FEATURES

SPHERICAL COORDINATES. (§13.7: p 876)

A. Spherical Coords. Look Like $(\rho, \theta, \phi)$
   - Cylindrical $(r, \theta, z)$
   - Transformation $T_c$

B. Transformation $T_c$

2. Discussion: a recall cylinder $(x = r \cos \theta, y = r \sin \theta, z = z)$

$P(x_0, y_0, z_0)$ is a pt in 3-sp, we wish to determine its spherical coordinates.

P and the z-axis determines a plane. The angle $\phi$ is in that plane.

\[ z = \rho \cos \phi \Rightarrow z = \rho \cos \phi \]

\[ x = \rho \sin \phi \cos \theta \]

\[ y = \rho \sin \phi \sin \theta \]

Restrictions:

\[ \rho > 0 \]

\[ 0 \leq \phi \leq \pi \]

\[ \rho \geq 0 \]

\[ 0 \leq \phi \leq \pi \]