

Coordinate Conversions

1. The following ECI state vector was given as an ephemeris point for an EROS-A scene over the Purdue campus.

X	5022605.826 m		
Y	-337894.999		
Z	4688512.959		
dXdt	5013.829 m/s		
dYdt	-1689.863		
dZdt	-5475.162		
time	2004/04/11	16:03:19.282	(Y/M/D H:M:S, UTC)

convert to kepler elements, and then convert back to state vector. Show all steps.

2. The following ECF state vector was given as an ephemeris point for a Quickbird scene over the Purdue campus.

X	381088.037 m		
Y	-5174428.901		
Z	4427438.384		
dXdt	-1278.872 m/s		
dYdt	-5009.789		
dZdt	-5729.377		
time	2006/10/07	16:57:21.426	(Y/M/D H:M:S, UTC)

convert to ECI. Show all steps.

Assume WGS-84 ellipsoid.