AE 502 HW 4 Report

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For each of the three sets of observations I found these state vectors and orbital elements:

Data Chunk	R1 (km)	R2 (km)	R3 (km)	V1 (km/s)	V2 (km/s)	V3 (km/s)
1	-4272.58	-951.1	6185.25	5.886	0.783	4.155
2	-4139.41	-935.059	6294.57	6.046	0.818	4.090
3	-4718.60	-994.362	5834.67	5.584	0.724	4.643

Data Chunk	Eccentricity	Semi-Major Axis (km)	Inclination (deg)	RA of Asc. Node (deg)	Arg of Per. (deg)	True Anomaly (deg)
1	0.00393	7564.5	87.648	189.22	170.72	244.07
2	0.0275	7804.91	87.679	189.26	57.403	358.69
3	0.0113	7655.78	87.782	189.21	48.454	2.025

Data Chunk	Epoch of data (MJD)
1	60055.1340277
2	60055.2104166
3	60055.2854166

Clearly there is some variation between each of the three sets of determinations. In particular it is of note that because the eccentricity is so small, numerical error in the argument of perigee is very visible. The difference in the true anomaly is expected and due to the satellite moving through its orbit between observations.