

**451-337 Satellite Positioning and Geodesy**  
**Practical Assignment 1 – Getting Familiar with Geodetic Coordinates**

**Aim**

The aim of this assignment is to re-familiarise students with geodetic coordinate calculations. The assignment builds on material contained in Chapter 2 of the class notes and on topics covered in the subject *Computational Methods in Geomatics*.

**Task**

Students are to work in pairs to complete this assignment. Your joint report should show all working out, along with explanations of what has been done and discussion as required.

**The problem**

The table below gives the MGA94 (Zone 55) coordinates of two points A and B. The table also shows the ellipsoidal height of each point and the associated geoid undulations.

Point	MGA94 Zone 55		Ellipsoid (h) (GRS80)	Geoid (N) (GRS80)
	Easting	Northing		
Point A	273741.2966	5796489.7768	25.326	3.748
Point B	287677.7589	5829978.9262	37.863	5.343

***In GDA94***

1. Using results from the *COORDS* software, tabulate the geodetic and cartesian coordinates of Points A and B (including ellipsoidal and orthometric heights)
2. Use a rotation matrix to calculate the geodetic bearing, zenith angle and plane distance from A to B
3. Calculate the orthometric and ellipsoidal height differences from A to B

***Transformation***

4. Again, using *COORDS* transform the coordinates for A and B into the AGD66 datum using the AGD66 to GDA94 national transformation parameters

***In AGD66***

5. Repeat task 1, 2 and 3 using the AGD66 coordinates

***Discussion***

6. Discuss your results and findings, drawing appropriate conclusions

**Submission details**

Due : 13 August 2008  
Weight : 6%

<b>451-337 Assignment 1</b>	<b>Mark out of</b>	<b>Mark given</b>
<b>Question 1</b>		
Geodetic coordinates for Point A	1	
Geodetic coordinates for Point B	1	
Cartesian coordinates for Point A	1	
Cartesian coordinates for Point B	1	
<b>Question 2</b>		
Geodetic bearing	2	
Plane distance	2	
Zenith angle	2	
<b>Question 3</b>		
Orthometric height difference	1	
Ellipsoidal height difference	1	
<b>Question 5(a)</b>		
Geodetic coordinates for Point A	1	
Geodetic coordinates for Point B	1	
Cartesian coordinates for Point A	1	
Cartesian coordinates for Point B	1	
<b>Question 5(b)</b>		
Geodetic bearing	2	
Plane distance	2	
Zenith angle	2	
<b>Question 5(c)</b>		
Orthometric height difference	1	
Ellipsoidal height difference	1	
<b>Question 6</b>		
Discussion of results and conclusions	7	
Overall quality of report	4	
<b>FINAL MARK</b>	<b>35</b>	
<b>Student number</b>		