

Date Adj. 1, 11 Feb 2011, HW3
due 1 week

1. isometric latitude q in terms of geodetic latitude ϕ :

$$q = \ln \left[\tan \left(\frac{\pi}{4} + \frac{\phi}{2} \right) \left(\frac{1 - e \sin \phi}{1 + e \sin \phi} \right)^{e/2} \right]$$

where,

$$a = 6378137 \text{ m}$$

$$e^2 = 2f - f^2$$

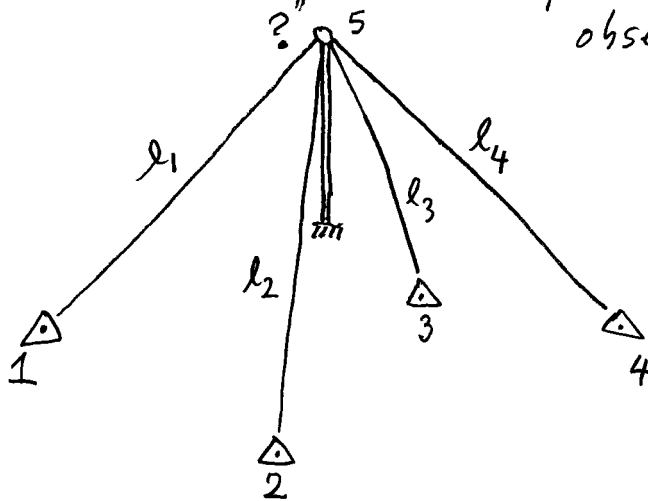
$$f = 1/298.257223563$$

$$e^2 = (a^2 - b^2) / a^2$$

$$b = a(1 - f)$$

given $q = 30^\circ - 05' - 10''$ find corresponding ϕ by
newton iteration.

2. find coordinates of unknown point by LS using the
observed 3D ranges.



	x	y	z	l	σ
1	130.00	120.00	2.50	365.38	.03
2	380.00	100.00	4.20	359.47	.02
3	400.00	300.00	1.00	188.51	.03
4	610.00	280.00	3.70	363.01	.02
5	~ 285	~ 450	~ 40		