***8.3 Given a course with an azimuth of 78◦16′08″ with an estimated error of ±5″ and a distance what are: of 485.32 ft with an estimated error of ±0.018 ft,**

(a) the latitude and departure?

D= 485.32

cos(78d16m08s

=Dcos(Theta) cos(78d16m08s)= 0.20331897

= 98.674765 ft

Latitude 98.67 ft

=Dsin(theta)

Sin(78d18m08s)= 0.97923068

Departure= Dsin(theta) D= 485.32

Departure= 475.24023 ft

Departure= 475.24 ft

Latitude= Dcos(theta)

Lat= 4

(b) the estimated errors in the latitude and departure?

Da AZ+Dist	DB +AZ+Dist	*	(Latitude)	=	
0.001388889	0.018		98.67476	=	0.003394662
563.5888889	563.58889				

Error in lat= 0.003

Da a	sin(0d0m08 sin(78d16d08s)	*	(departure)	=

0.018	3.879E-05	475.2402	=	0.036451605
485.32	0.9791126			

Error in departure= 0.036

8.5 Same as Problem 8.3, except the azimuth is 40∘03′57″ ± 3.3″ and the distance is 1254.98 ± 0.013 ft.

(a) the latitude and departure? D= 1254.98 +/- (3.3s) 0.0013

cos(40d03m57s

=Dcos(Theta) cos(40d03m57s)= 0.76530537

= 960.44293 ft

Latitude 960.44 ft

=Dsin(theta)

sin(40d03m57s)= 0.64366738

Departure= Dsin(theta) D= 1254.98

Departure= 807.78968 ft

Departure= 807.79 ft

Latitude= Dcos(theta)

Lat= 4

(b) the estimated errors in the latitude and departure?

Da	DB	*	(Latitude)	=	
AZ+Dist	+AZ+Dist				
0.000916667	0.0013		960.4429	=	0.001643943
1295.045833	1295.0458				

Error in lat= **0.002**

Da a	sin(0d0m08s * sin(78d16d08s)	(departure)	=	
0.0013 1295.045833	3.879E-05 0.9791126	807.7897	=	0.032809447

Error in departure= **0.033**