After selecting Body$_1$ visualize that you are standing at the center of a 12 hour clock face and the vertical circle from your zenith passing through Body$_1$ intersects the horizon at the 12 o'clock position. Select Body$_2$ from a vertical circle that intersects the horizon at or near the 8 o'clock position and Body$_3$ from a vertical circle that intersects the horizon at or near the 4 o'clock position, this will produce the optimum crossing angles at the intersection of the 3 circles

Three Body Fix Using Intersections of Circles of Equal Altitude

Enter data into yellow cells

	Day	Month	Year
Date @ Greenwich	17	Aug.	2018

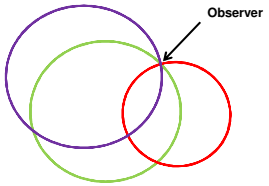
	Body$_1$	Body$_2$	Body$_3$
	ARCTURUS	RIGIL KENTAURUS	ALTAIR
Limb			
GMT	19:20:00	19:20:00	19:20:00
GHA	41 deg. 59.7 min	35 deg. 54.1 min	318 deg. 11.6 min
Dec	19 deg. 5.5 min. N	60 deg. 54.8 min. S	8 deg. 55.3 min. N
Ho	51 deg. 13.3 min	35 deg. 12 min	31 deg. 26.9 min
Body is	NW of the observer	SSW of the observer	E of the observer
GP of Body	Lat 19° 05.5' N Lon 41° 59.7' W	Lat 60° 54.8' S Lon 35° 54.1' W	Lat 8° 55.3' N Lon 41° 48.4' E
Radius of the Circle of Equal Altitude	2326 n. mi.	3288 n. mi.	3513 n. mi.

A Circle of Equal Altitude

A Circle of Equal Altitude (**CEA**) is centered at the Geographic Position(**GP**) of a Body. The Latitude of the body's **GP** is defined by the body's Declination(**Dec**). The Longitude of the body's **GP** can be determined from the body's Greenwich Hour Angle **(GHA**). The radius of a Circle of Equal Altitude in nautical miles is **60x(90° - Ho).** When three bodies are observed, the three Circles of Equal Altitude will have six intersections.

Observer's position determined from the intersections of Circles of Equal Altitude

Observer's Latitude	8 deg.	29.9 min	S
Observer's Longitude	14 deg.	19.7 min	W



Click to view 2 Body Fix Using Intersections of Circles of Equal Altitude

This worksheet assumes all sights were taken from the same geographic position.

Select Intersections to Use in Calculating Fix

If the sights were "accurate", three of the intersections listed below will be at or near the observer's geographic position.

	Intersection 1	Intersection 2	Intersection 3	Intersection 4	Intersection 5	Intersection 6
Use Intersection in Calculating Fix	Yes	No	No	Yes	Yes	No
Body$_1$ & Body$_2$ Lat	8 deg. 30.30 min S	11 deg. 0.80 min S				
Body$_1$ & Body$_2$ Lon	14 deg. 21.31 min W	17 deg. 11.81 min W				
Body$_1$ & Body$_3$ Lat			48 deg. 6.91 min N	8 deg. 28.36 min S		
Body$_1$ & Body$_3$ Lon			10 deg. 10.23 min W	14 deg. 19.31 min W		
Body$_2$ & Body$_3$ Lat					8 deg. 30.90 min S	46 deg. 17.89 min S
Body$_2$ & Body$_3$ Lon					14 deg. 18.58 min W	63 deg. 34.89 min E