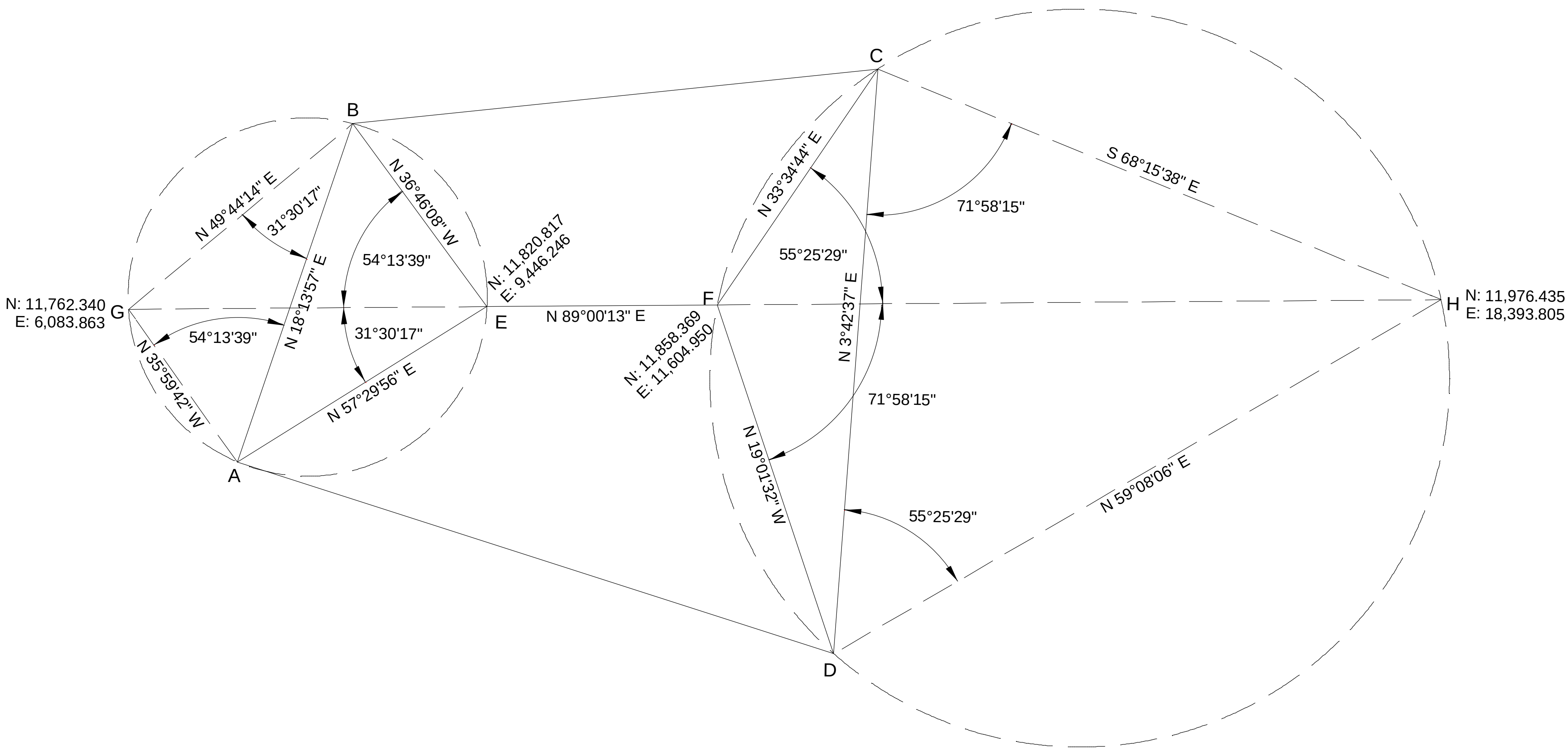
B
C
N 49°44'14" E
31°30'17"
N 36°46'08" W
N 33°34'44" E
S 68°15'38" E
71°58'15"
54°13'39"
N 18°13'57" E
N: 11,820.817
E: 9,446.246
55°25'29"
N 3°42'37" E
N: 11,762.340
E: 6,083.863
G
E
N 89°00'13" E
F
H
N: 11,976.435
E: 18,393.805
54°13'39"
31°30'17"
N 35°59'42" W
N 57°29'56" E
N: 11,858.369
E: 11,604.950
71°58'15"
N 19°01'32" W
A
55°25'29"
N 59°08'06" E
D

Construct a circle through A, B, and E as well as one through C, D, and F. They do not need to be drawn to scale; they may be sketched-in only just to understand the concepts of the solution given here. (One way would be to draw the quadrilateral, to scale if you like, then draw any size circle through the corners, draw a line through the whole thing and spot points E and F where they cross the circles)

Extend the line E-F to intersect the circles at points G and H. In figure A-G-B-E, the supplements of the given angles are shown along with their counterparts: angle B-E-G and angle B-A-G subtend the same chord and are therefore equal (54°13'39"). The same applies to angles A-E-G and A-B-G (31°30'17"). Applying the same concept to figure D-F-C-H, angles C-F-H and C-D-H are equal (55°25'29"), as are angles D-F-H and D-C-H (71°58'15").

By an the inverse of the given coordinates between points A and B, calculate bearings for A-G and B-G and then the coordinates for point G by bearing-bearing intersection or other method of your choice: N = 11,762.340, E = 6,083.863.

Do the same with the inverse between D and C to get bearings for D-H and C-H to get the coordinates of point H: N = 11,976.435, E = 18,393.805.

An inverse between G and H yields a bearing of N 89°00'13" E, which is then used with the supplemental angles to get bearings for A-E, B-E, F-C, and F-D and coordinates for points E and F, again by bearing-bearing intersection:

Point E = N 11,820.817, E 9,446.246 and point F = N 11,858.369, E 11,604.950.