

Submission : CITE Offices.



4. Angle and distance measurements have been made to determine the position of points in the form of a traverse, as in the diagram. The bearing of the line AB is  $75^{\circ}06'22''$ . The observed values are as follows:

$$\beta = \angle ABC = 159^{\circ}27'16''$$

$$\gamma = \angle BCD = 249^{\circ}01'49''$$

$$\delta = \angle CDE = 268^{\circ}16'02''$$

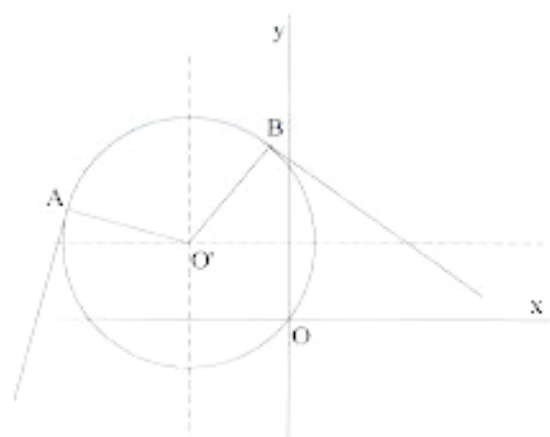
$$\epsilon = \angle DEX = 55^{\circ}38'42''$$

AB=110.260m, BC=87.291m, CD=95.412m,  
DE=74.269m, EX=81.417m

315129  
553842

Calculate the coordinates of points B, C, D, E, and X to a precision of 1mm.

If the angle and distance measurements of point X have previously been determined as  $\angle NAX = 96^{\circ}25'24''$  and distance AX=301.605m, determine the length of the misclosure and its bearing.



5. The equation of the circle whose centre is at point O' is

$$x^2 + 40x + y^2 - 30y = 0$$

The y coordinate of point A is 20m, and that of point B is 36m.

Find the length of the arc AB to a precision of 1mm.

If a kerbstone is 0.915m in length, how many whole kerbstones would be needed if the arc AB represents the kerb of a road.

6. Three points (A,B,C) lie on the quadratic equation  $ax^2 + bxy + cy^2 = 25.344$

If the x and y coordinates of the points are A(1.000,2.000), B(-2.000,8.530), and C(0.000,3.576), then by generating three equations, find the values for a, b, and c to 3 decimal places.

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