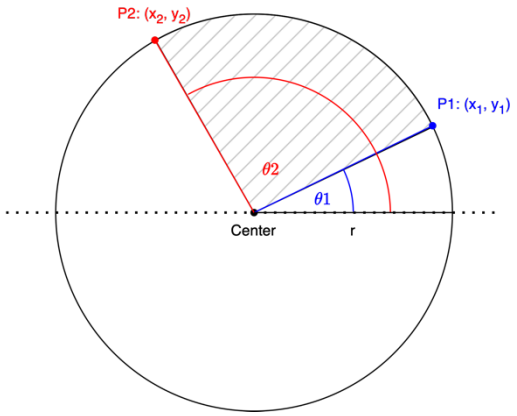
Question #1: Area of Sector

Objective: Expression



Given two angles θ_1 and θ_2 (**in degrees**) and the radius *r* of a circle, calculate the distance between the two points, **P1** and **P2**, on the circle's circumference, as well as the area of shaded sector.

$$distance = 2r \times \sin\left(\frac{\theta_1 - \theta_2}{2}\right)$$

$$area = \frac{1}{2}\theta r^2, where\ \theta\ is\ the\ angle\ of\ the\ sector$$

Note that the θ in the above formulars are in **radians**.

INPUT

A single line containing *r*, θ_1 and θ_2 separated by a space. (No negative value)

OUTPUT

A single line containing the calculated distance and area, **rounded to 4 decimal points**.

EXAMPLES

Input (from keyboard)	Output (on-screen)	Description
30 60.0 2.0	1.0353 1.0472	Same quadrant
135.5 67.8 4.5	5.0132 11.9636	Adjacent quadrant
780 550 4.8	8.7006 46.2442	Opposite quadrant
0.0 90 1	1.4142 0.7854	Points on axis
0 360 2	0.0 12.5664	Points on axis

Testcases in Grader

Testcases quantity	Testcase characteristics
25%	Two points are on the same quadrant
25%	Two points are on the adjacent quadrants
25%	Two points are on the opposite quadrants
25%	Two points are on the axis