

A Program to Convert Polar Coordinates to Cartesian and Vice Versa

Write a program in R that allows you to convert polar coordinates to Cartesian coordinates and vice versa.

Description

- Converting Polar to Cartesian Coordinates:** To convert polar coordinates (r, θ) to Cartesian coordinates (x, y) , we use the following equations: $x = r \cdot \cos(\theta)$ $y = r \cdot \sin(\theta)$
- Converting Cartesian to Polar Coordinates:** To convert Cartesian coordinates (x, y) to polar coordinates (r, θ) , we use the following equations: $r = \sqrt{x^2 + y^2}$ $\theta = \tan^{-1}(\frac{y}{x})$

Example

Input 1:

```
r = 5
theta = pi/6
```

Output 1:

```
x = 4.330127
y = 2.50
```

Input 2:

```
x = 2
y = 4
```

Output 2:

```
r = 4.47
theta = 1.107149
```

Notes

- To work with the number π in R, you can use the keyword pi.
- Commenting (providing brief explanations of the code) will be considered as part of the evaluation.