Assignment 3

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Download all python codes from

https://github.com/ka−raja−babu/Matrix−Theory/tree/main/Assignment3/Codes

and latex-tikz codes from

https://github.com/ka−raja−babu/Matrix−Theory/tree/main/Assignment3

1 Question No. 52

With the same centre **O**,draw two circles of radii 2.5 and 4.

2 Solution

Let the centre of given circles be origin:

$$\mathbf{O} = \begin{pmatrix} 0 \\ 0 \end{pmatrix} \tag{2.0.1}$$

According to given data,radii of circles are:

$$r1 = 2.5 \tag{2.0.2}$$

$$r2 = 4 \tag{2.0.3}$$

Polar coordinates of any circle **C** are defined as:

$$\mathbf{C} = r\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix} \tag{2.0.4}$$

where r is radius of circle and θ is angle of circle ranging from 0 to 2π .
So,the polar coordinates of circle **C**1 having r=2.5 is:

$$\mathbf{C}1 = r1\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix} \tag{2.0.5}$$

$$\implies \mathbf{C}1 = 2.5\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix} \tag{2.0.6}$$

Similarly,the polar coordinates of circle **C**2 having r=4 is:

$$\mathbf{C}2 = r2\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix} \tag{2.0.7}$$

$$\implies \mathbf{C}2 = 4\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix} \tag{2.0.8}$$

	Circle1	Circle2
Centre	$\begin{pmatrix} 0 \\ 0 \end{pmatrix}$	$\begin{pmatrix} 0 \\ 0 \end{pmatrix}$
Radius	2.5	4
Polar coordinate	$2.5\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix}$	$4\begin{pmatrix} \cos\theta \\ \sin\theta \end{pmatrix}$
Angle	0-2π	0-2π

TABLE 2.1: Input values

Fig. 2.1 is plotted using radii and polar coordinates with the angle ranging from 0 to 2π . Table 2.1 provides all required input values.
Plot of concentric circles:

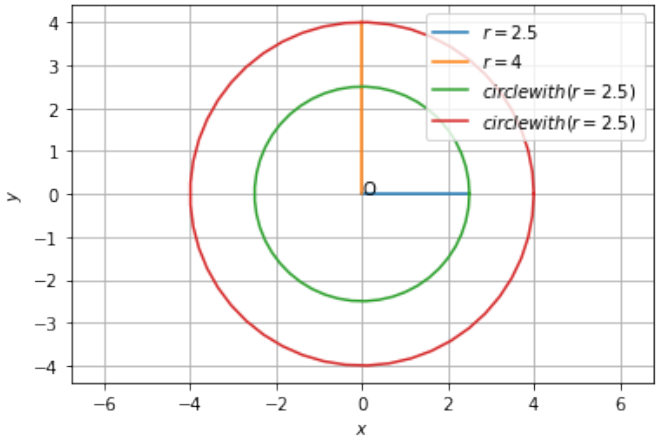

Fig. 2.1: Concentric circles with centre as origin and radii 2.5 and 4 respectively