

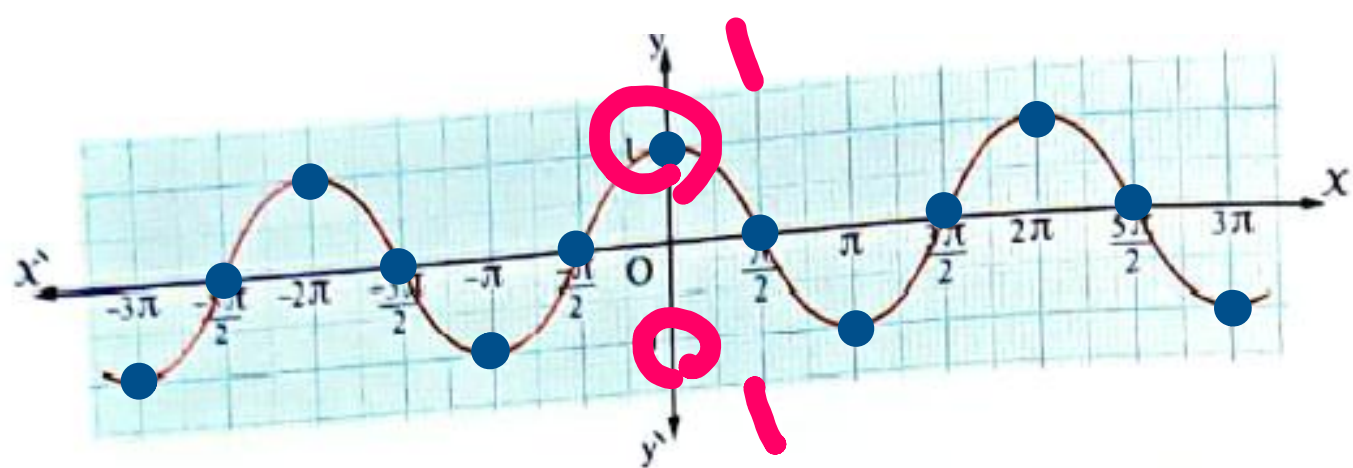
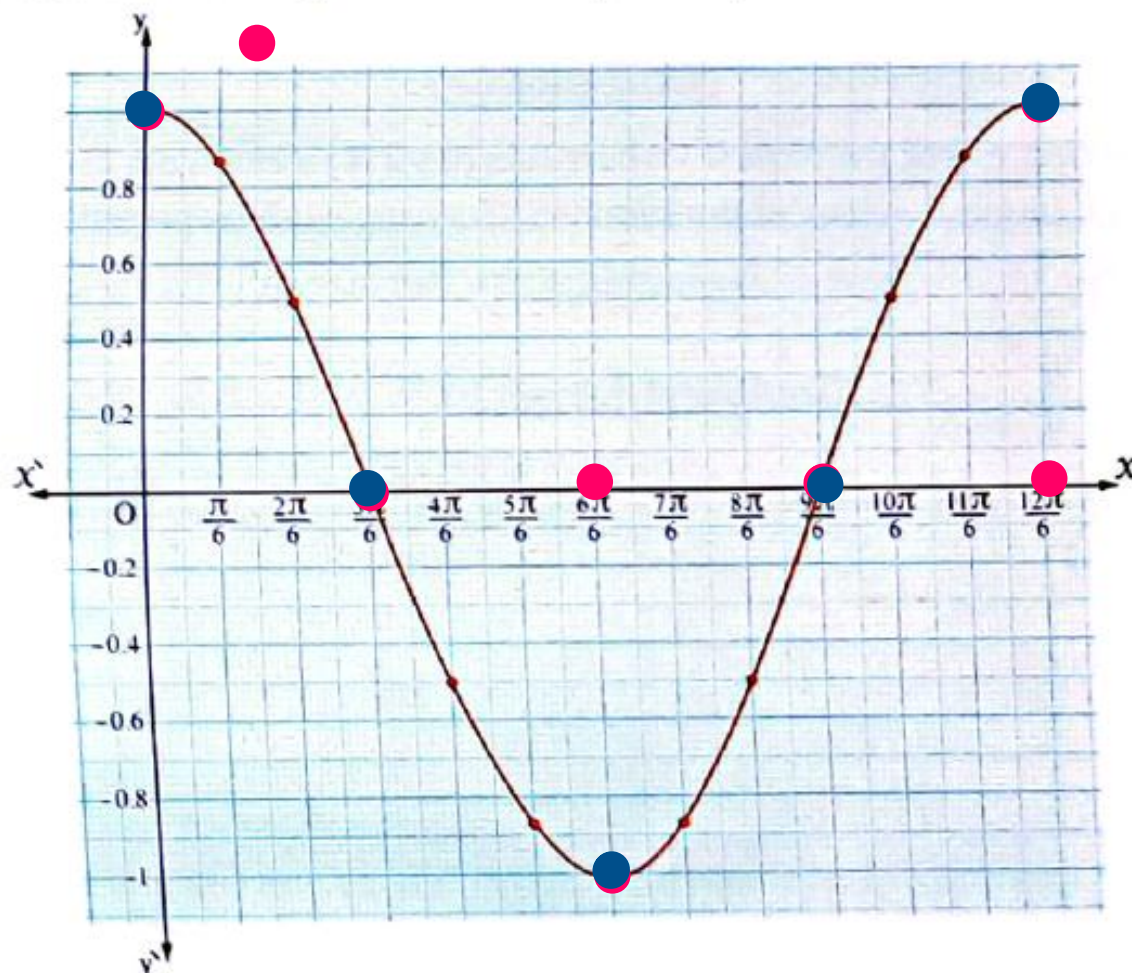
Graphing Trigonometric Functions_3

Wednesday, November 19, 2025 10:56 PM

To represent the function $f : f(\theta) = \cos \theta$ graphically, we form the following table for some special values of θ on the interval $[0, 2\pi]$ and the corresponding values of $\cos \theta$

θ	0	$\frac{\pi}{6}$	$\frac{2\pi}{6}$	$\frac{3\pi}{6}$	$\frac{4\pi}{6}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{8\pi}{6}$	$\frac{9\pi}{6}$	$\frac{10\pi}{6}$	$\frac{11\pi}{6}$	2π
$\cos \theta$	1	0.87	0.5	0	-0.5	-0.87	-1	-0.87	-0.5	0	0.5	0.87	1

Represent all of the points that we get in the table on the coordinate axis and join them to get the curve of the function f on the interval $[0, 2\pi]$



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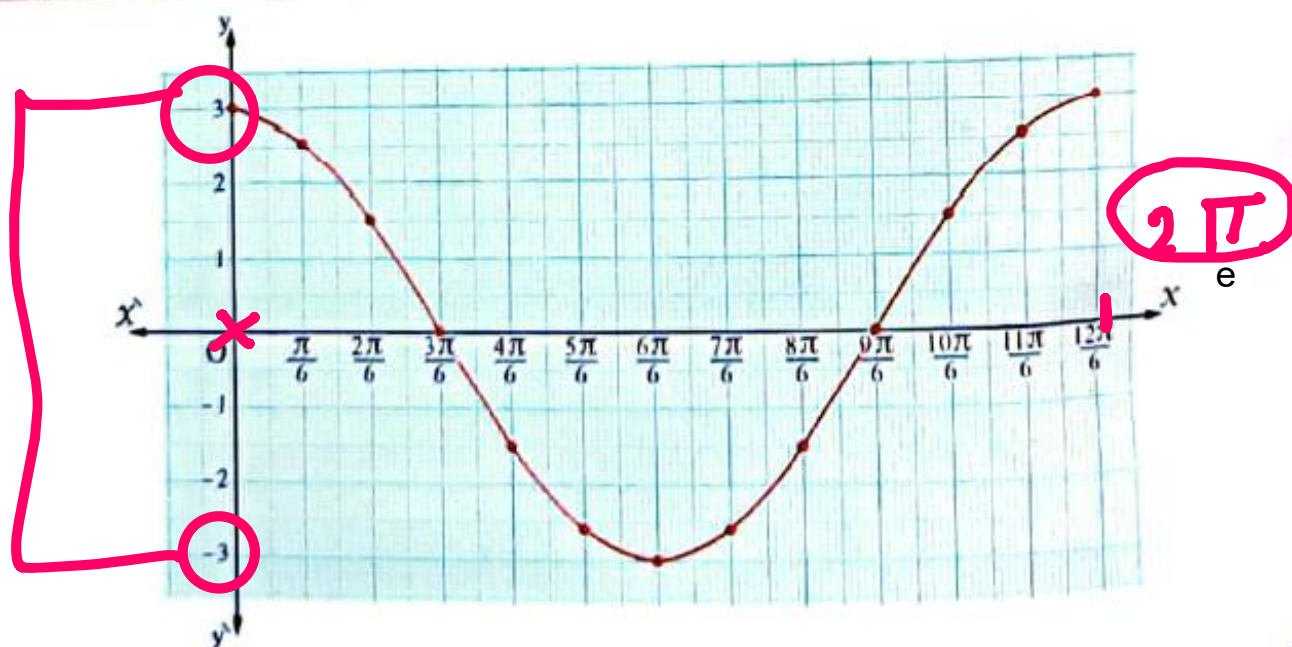
Graphing Trigonometric Functions_4

Wednesday, November 19, 2025 10:56 PM

Graph the function where $y = 3 \cos \theta$, where $\theta \in [0, 2\pi]$, and from the graph find the maximum and minimum values of the function, its range and its period.

Solution

θ	0	$\frac{\pi}{6}$	$\frac{2\pi}{6}$	$\frac{3\pi}{6}$	$\frac{4\pi}{6}$	$\frac{5\pi}{6}$	π	$\frac{7\pi}{6}$	$\frac{8\pi}{6}$	$\frac{9\pi}{6}$	$\frac{10\pi}{6}$	$\frac{11\pi}{6}$	2π
y	3	2.6	1.5	0	-1.5	-2.6	-3	-2.6	-1.5	0	1.5	2.6	3



$$f(x) = 3 \cos \theta$$

- The maximum value of the function = 3, the minimum value of the function = -3
- The range of the function = [-3, 3]
- The period of the function = 2π (i.e. 360°)

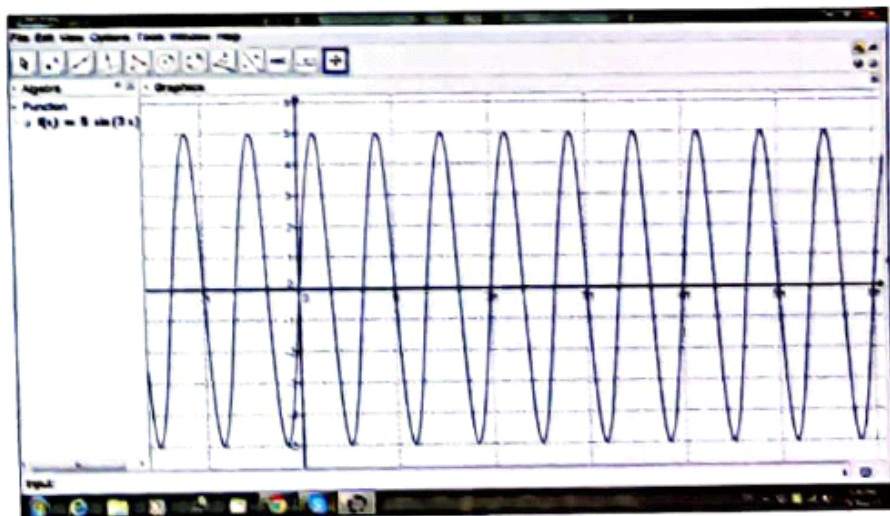
Use a graph program on your computer to graph the function where $y = 5 \sin 3\theta$, and from the graph, find:

- The range of the function.
- The maximum and minimum values of the function.
- The period of the function.

Solution

We will use Geogebra Program that we can download for free from the website "www.geogebra.org"

- 1 Write in the "input" bar the form of the function " $y = 5 \sin (3x)$ "
- 2 Press "enter" and the graph will appear as follows:



- The range of the function = $[-5, 5]$
- The maximum value = 5, the minimum value = -5
- The period of the function = $\frac{2\pi}{|b|} = \frac{2\pi}{3}$ i.e. 120°