

Task:

The point (x,y) is more than 2 units but less than 6 units from the center $(-1,3)$ of a circle. Can you describe the graph of these points?

Solution:

The point (x,y) is more than 2 units means a circle with radius of 2(internal circle).

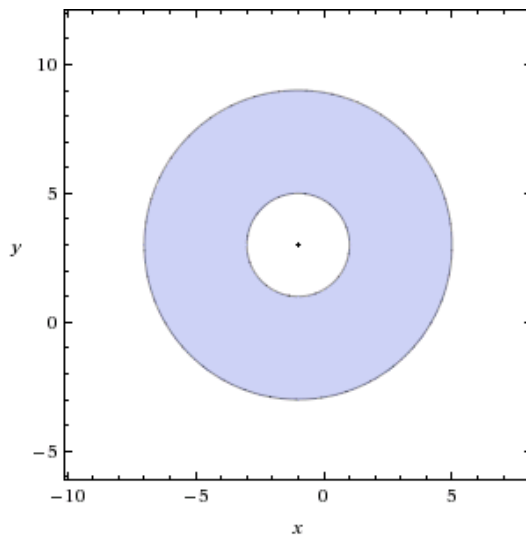
The point (x,y) is more than 6 units means a circle with radius of 6(external circle).

So we get equations:

$$\begin{cases} (x + 1)^2 + (x - 3)^2 > 2^2 \\ (x + 1)^2 + (x - 3)^2 < 6^2 \end{cases}$$

$$\begin{cases} (x + 1)^2 + (x - 3)^2 > 4 \\ (x + 1)^2 + (x - 3)^2 < 36 \end{cases}$$

Plot it:



The graph of these points is region bounded by two concentric circles radius of 2 and 6 with center in $(-1, 3)$, while these two circles are not included in this area.

Answer: an annulus without outer circles.