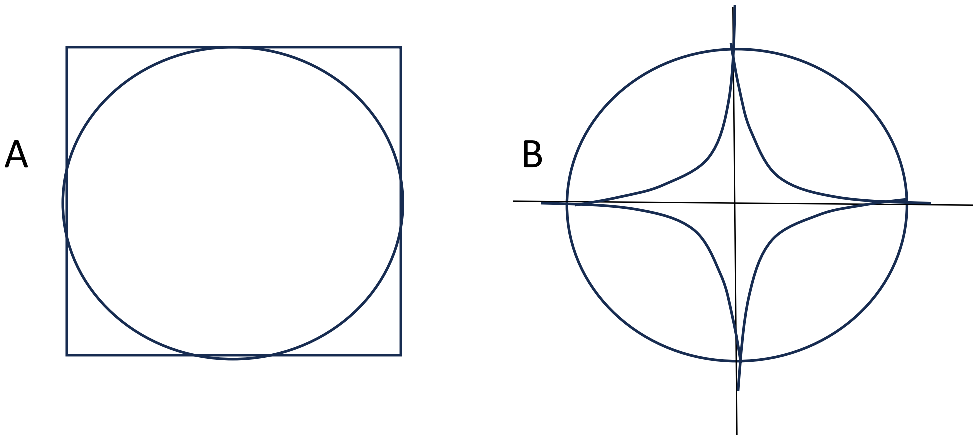
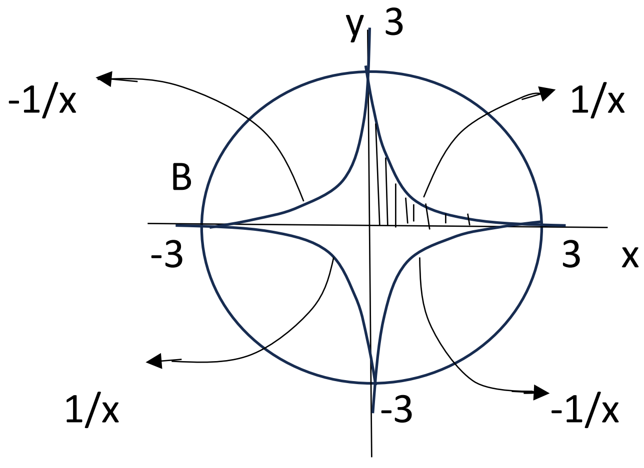
**Area of the circular contour :**

In the circle inscribed in a square (A) , let's fold the vertices none inside getting B




in B we can interpret the curves of each quadrant as a   $y= 1/x$




We know that $x^2+y^2=R^2$ like this how when $x=1 \rightarrow y=1$

and when $x= -1 \rightarrow y=- 1$

when $x=0 \rightarrow y= \infty$   and when $y=0 \rightarrow x =\infty$

suppose $R= 3$   and $\lim_{x \to o} y = 3$

to find the area pointed out we will do :

$\int_0^3 \frac{1}{x}dx =$ Ln x $\Big|_0^3$ →Ln3-Ln0 →Ln3v – Ln ( $e^3$)

let's put y= Lnx →x=$e^y$ →x=$e^3$

instead when we treat y= -1/x: $\int_{-3}^{0} -\frac{1}{x}dx =$ -Ln x $\Big|_{-3}^{0}$ →

→- Ln( $e^3$) – (- Ln( -3)) →- Ln ( $e^3$) – (- Ln( 0))→

→- Ln ( $e^3$) + Ln (- 1)+ Ln ( 3) →- Ln( $e^3$) + i. π + Ln ( 3)

Then add the areas : Ln ( 3)- Ln ( $e^3$)+ (- Ln( $e^3$) + i. π + Ln ( 3))→

→and we multiply them by 2 since there are four quadrants:

Area = 2[2 Ln( 3)- 2 Ln( $e^3$)+ i. π ]= 4 Ln( 3)- 12 + 2.i. π

Note that also Area = $(2R)^2$ – [ π $R^2$ ]