0.1   Disks

We defined an open disk at (a, b) of radius r as:

$\{(x, y) \in \mathbb{R}^2 : (x - a)^2 + (y - b)^2 < r^2\}$

For a closed disk it is:

$\{(x, y) \in \mathbb{R}^2 : (x - a)^2 + (y - b)^2 \leq r^2\}$

0.2   Annulus

An annulus is a disk, which excludes a smaller disk inside the disk

0.3   Punctured disk

If the interior disk is just a point, it is a punctured disk.