POLARES

CARACOLES

$r = a \pm b\cos(\theta)$ o $r = a \pm b\,sen(\theta)$; $a > 0$; $b > 0$

SIMETRÍAS:

$r = a + b\cos(\theta)$ simetría con respecto al eje polar, apunta a 0

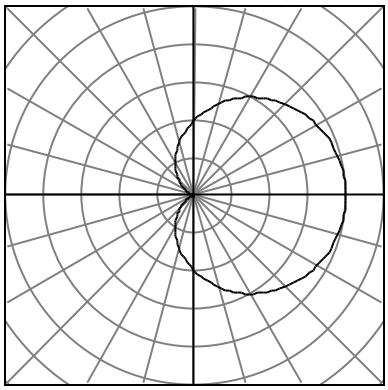
$r = a - b\cos(\theta)$ simetría con respecto al eje polar, apunta a π

$r = a + b\,sen(\theta)$ simetría con respecto a $\frac{\pi}{2}$, apunta a $\frac{\pi}{2}$

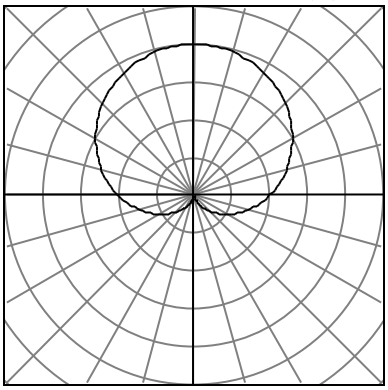
$r = a - b\,sen(\theta)$ simetría con respecto a $\frac{\pi}{2}$, apunta a $\frac{3\pi}{2}$

1) Si $\frac{a}{b} = 1$ Cardioide

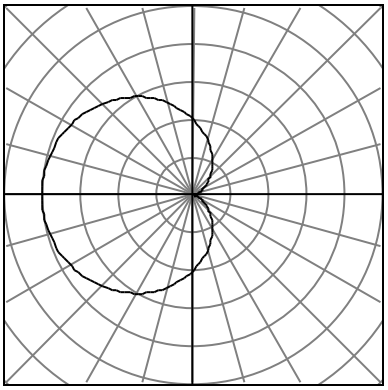
$r = 2 + 2\cos(\theta)$



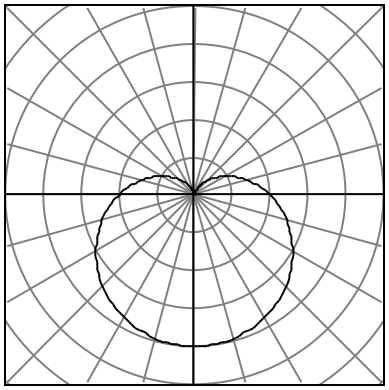
$r = 2 + 2sen(\theta)$



$r = 2 - 2\cos(\theta)$

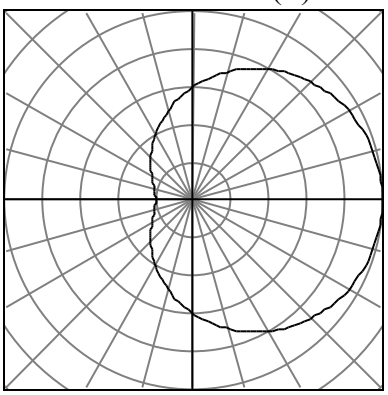


$r = 2 - 2sen(\theta)$

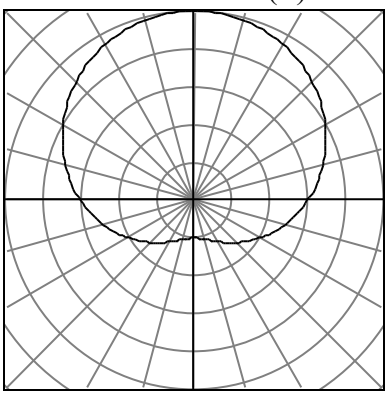


2) **Si** $1 < \frac{a}{b} < 2$ **Caracol con hendidura**

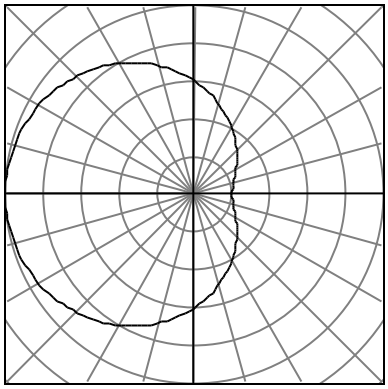
$r = 3 + 2\cos(\theta)$



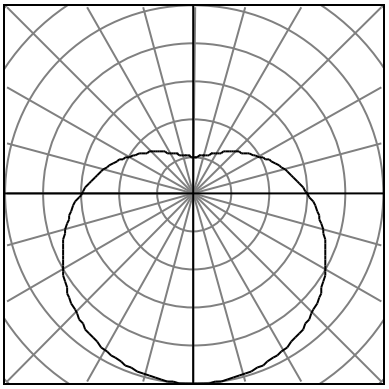
$r = 3 + 2\,sen(\theta)$



$r = 3 - 2\cos(\theta)$

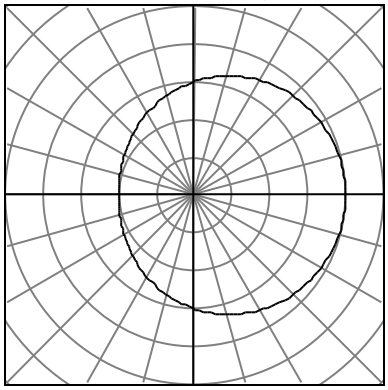


$r = 3 - 2\,sen(\theta)$

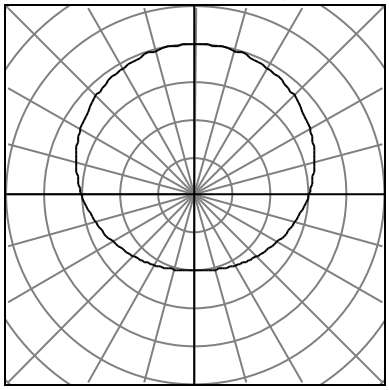


3) **Si** $2 \le \frac{a}{b}$ **Caracol convexo**

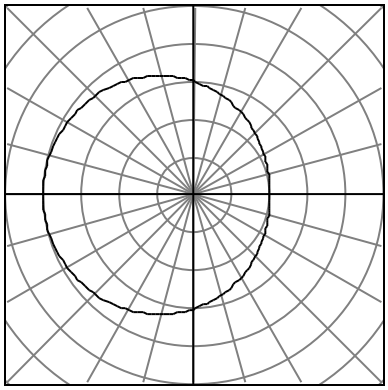
$r = 3 + \cos(\theta)$



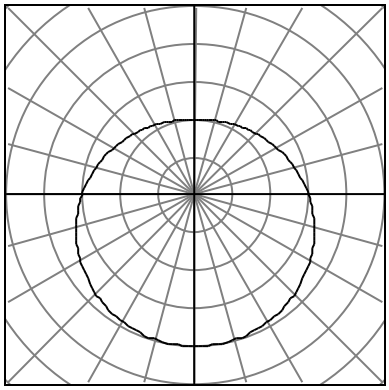
$r = 3 + sen(\theta)$



$r = 3 - \cos(\theta)$



$r = 3 - sen(\theta)$



ROSAS O ROSETAS

$r = a\cos(n\theta)$ o $r = a\,sen(n\theta)$; nº de hojas $\begin{cases} n & ; n \text{ impar} \\ 2n & ; n \text{ par} \end{cases}$

SIMETRÍAS:

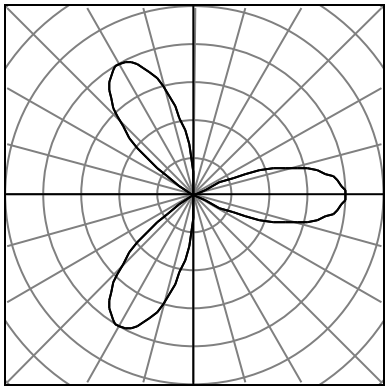
Si n par ; $r = a\cos(n\theta)$ simetría con respecto al eje polar, al polo; a $\frac{\pi}{2}$.

Si n impar; $r = a\cos(n\theta)$ simetría con respecto al eje polar.

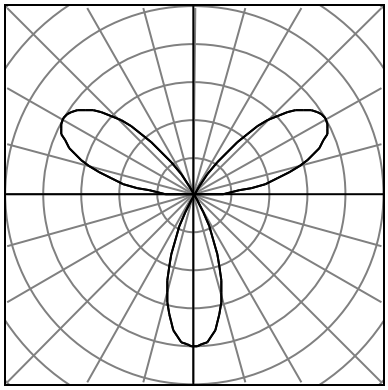
Si n par ; $r = a\,sen(n\theta)$ simetría con respecto al eje polar, al polo; a

Si n impar; $r = a\,sen(n\theta)$ simetría con respecto a $\frac{\pi}{2}$

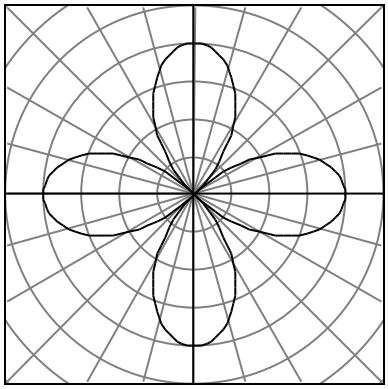
$r = 4\cos(3\theta)$



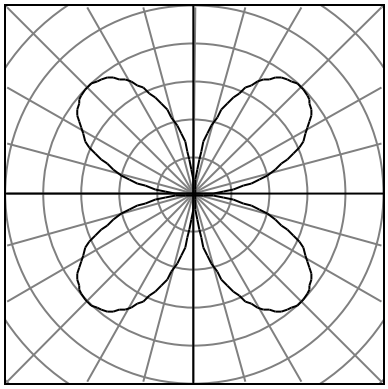
$r = 4\,sen(3\theta)$



$r = 4\cos(2\theta)$



$r = 4\,sen(2\theta)$



CIRCUNFERENCIAS

$$r = a\cos(\theta) \qquad o \qquad r = a\,sen(\theta)$$

SIMETRÍAS:

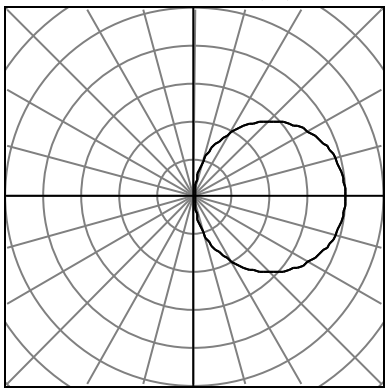
Si $a > 0$; $r = a\cos(\theta)$ simetría con respecto al eje polar, apunta a 0

Si $a < 0$; $r = a\cos(\theta)$ simetría con respecto al eje polar, apunta a π

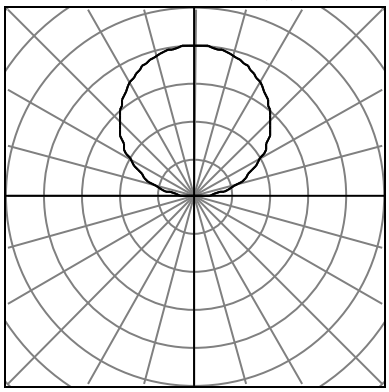
Si $a > 0$; $r = a\,sen(\theta)$ simetría con respecto a $\frac{\pi}{2}$, apunta a $\frac{\pi}{2}$

Si $a < 0$; $r = a\,sen(\theta)$ simetría con respecto a $\frac{\pi}{2}$, apunta a $\frac{3\pi}{2}$

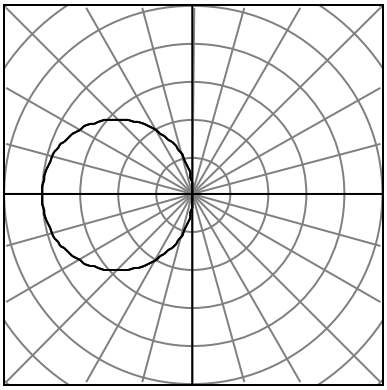
$r = 4\cos(\theta)$



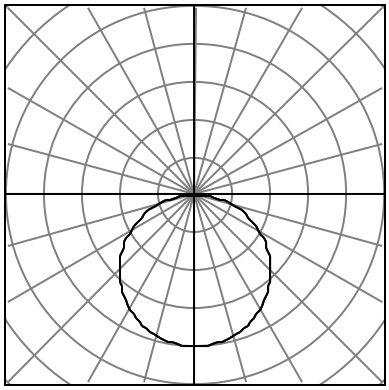
$r = 4\,sen(\theta)$



$r = -4\cos(\theta)$



$r = -4\,sen(\theta)$



LEMNISCATAS

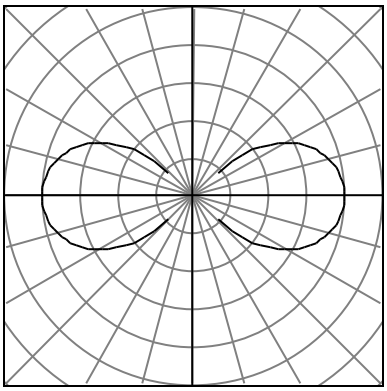
$$r^2 = a^2\cos(2\theta) \qquad o \qquad r^2 = a^2\,sen(2\theta)$$

SIMETRÍAS:

$r^2 = a^2\cos(2\theta)$ simetría con respecto al eje polar

$r^2 = a^2\,sen(2\theta)$ simetría al polo.

$r^2 = 16\cos(2\theta)$



$r^2 = 16\,sen(2\theta)$