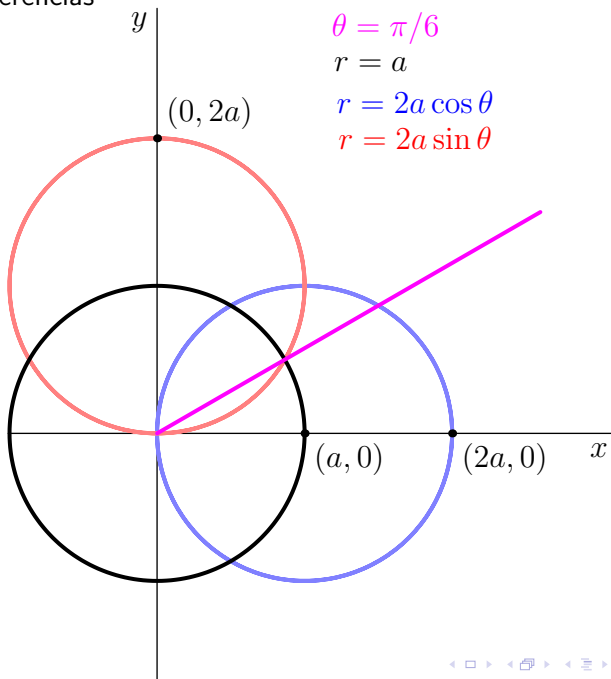


# Curvas en polares

Matemáticas. Primero del Grado de Químicas

Luis Rández

# Circunferencias

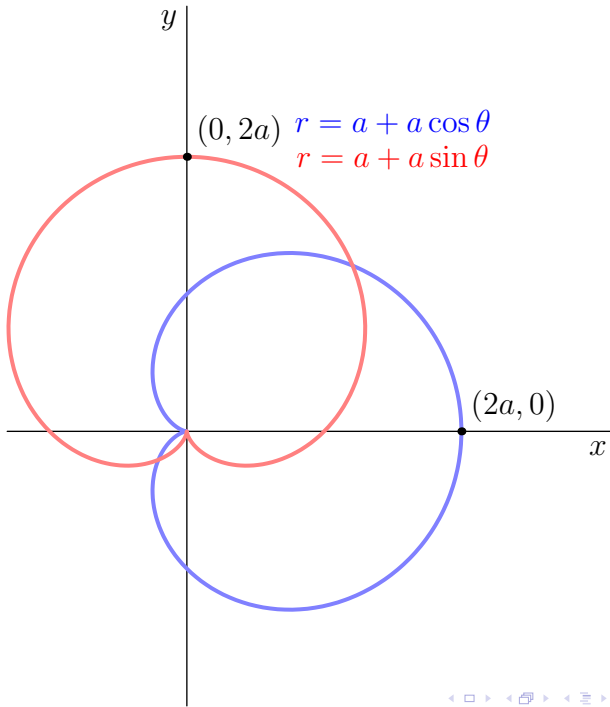


$$\theta = \pi/6$$

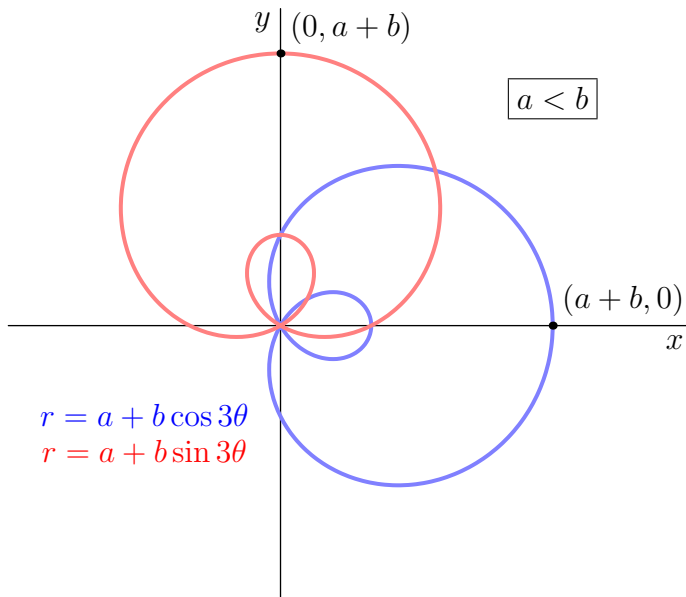
$$r = a$$

$$r = 2a \cos \theta$$

$$r = 2a \sin \theta$$

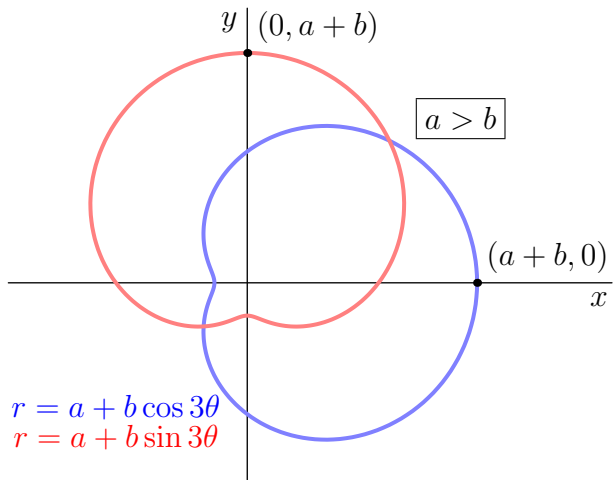


# Cardioides



$$r = a + b \cos 3\theta$$

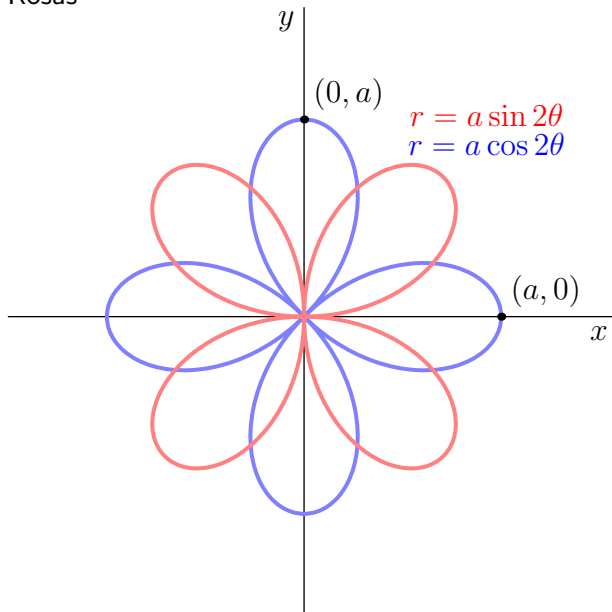
$$r = a + b \sin 3\theta$$

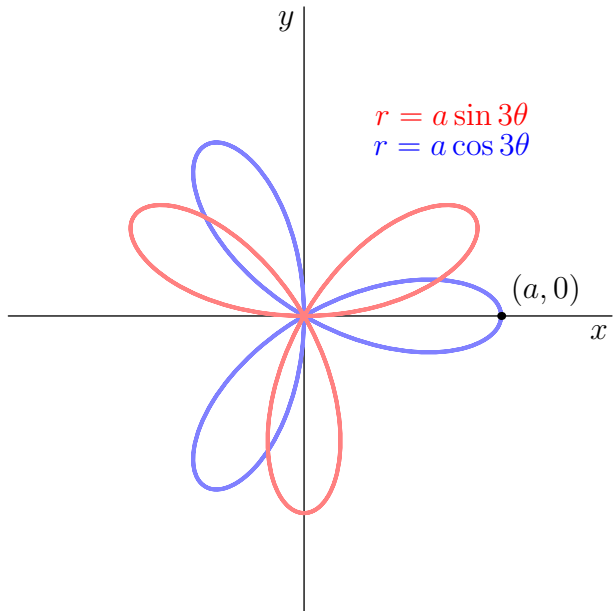




cardioides como caústicas

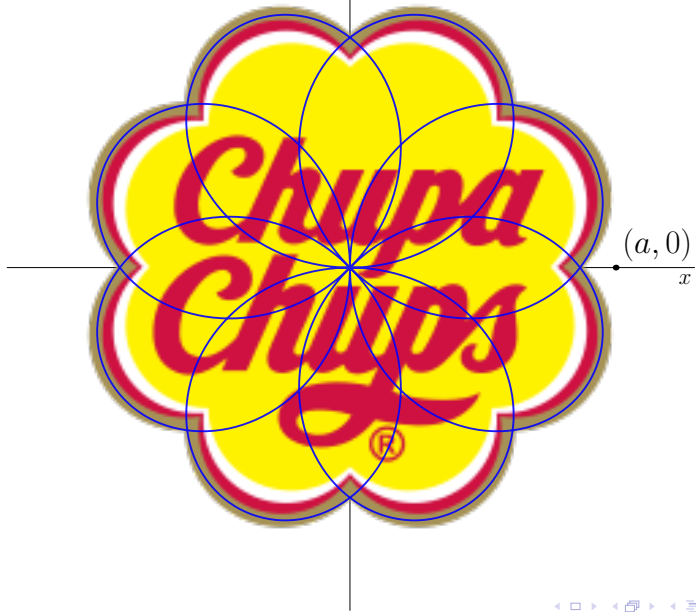
# Rosas



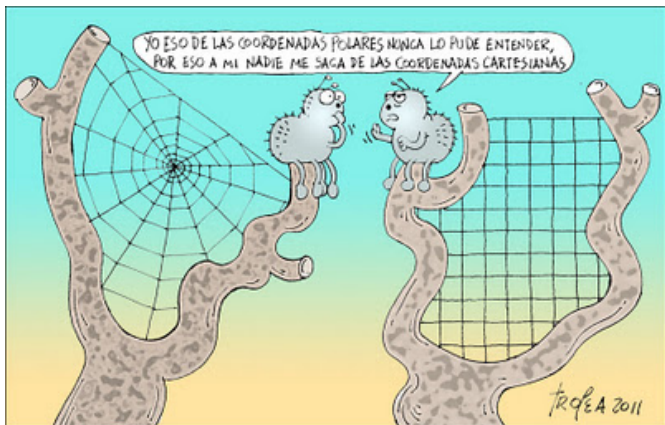


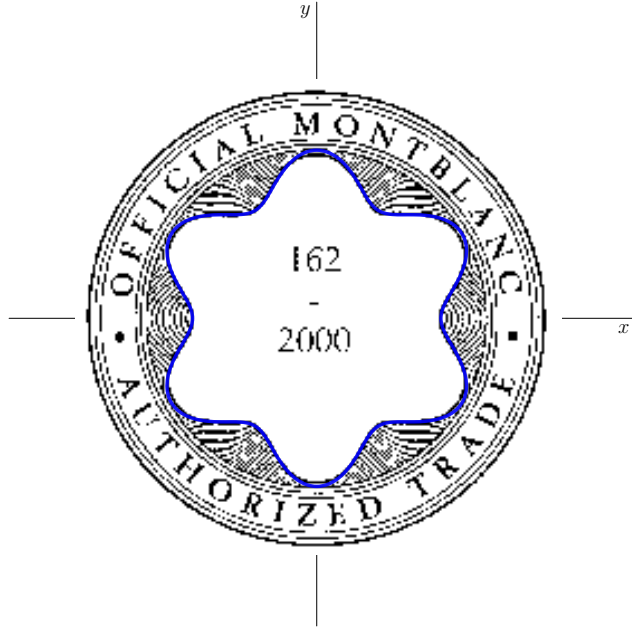


$$r = a \sin(4/3\theta)$$



Para saber más sobre las coordenadas polares y su relación con las abejas [http://es.wikipedia.org/wiki/Danza\\_de\\_la\\_abeja](http://es.wikipedia.org/wiki/Danza_de_la_abeja)





$$r = 0.95 + 1/7 \cos(6\theta + \pi)$$