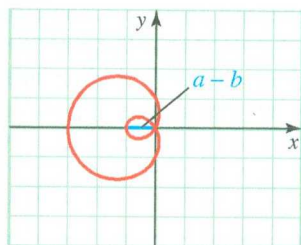
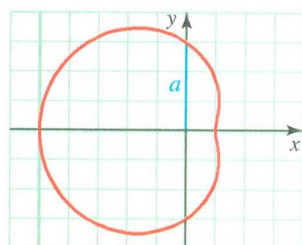


Table 6.2 Directory of Polar-Form CurvesLIMAÇONS $r = b \pm a \cos \theta$ and $r = b \pm a \sin \theta$ 

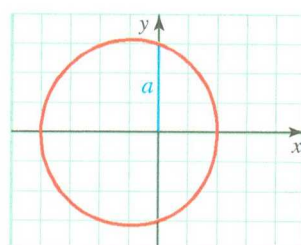
$$r = b - a \cos \theta, \frac{b}{a} < 1$$

standard form, inner loop



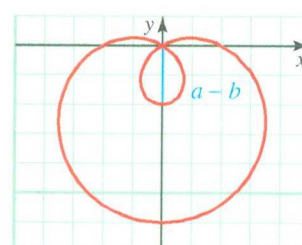
$$r = b - a \cos \theta, 1 < \frac{b}{a} < 2$$

standard form, dimple

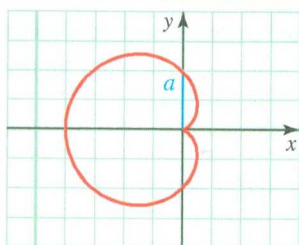


$$r = b - a \cos \theta, \frac{b}{a} \geq 2$$

standard form, convex

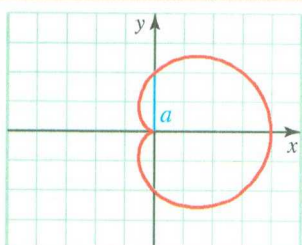


$$r = b - a \sin \theta, \frac{b}{a} < 1$$

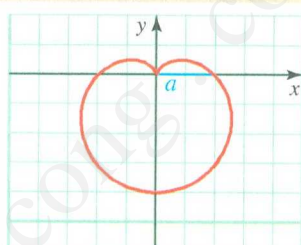
 $\frac{\pi}{2}$ rotation; inner loopCARDIOIDS $r = a(1 \pm \cos \theta)$ and $r = a(1 \pm \sin \theta)$ Limaçons in which $a = b$ 

$$r = a - a \cos \theta$$

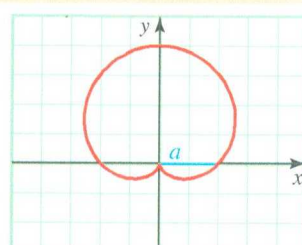
standard form



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

 π rotation

$$r = a - a \sin \theta$$

 $\frac{\pi}{2}$ rotation

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

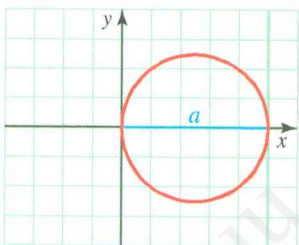
 $\frac{3\pi}{2}$ rotation

ROSE CURVES

$$r = a \cos n\theta \text{ and } r = a \sin n\theta$$

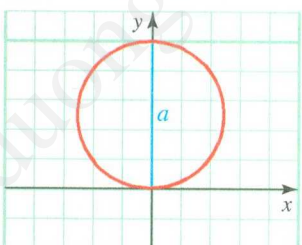
LEMNISCATES

$$r^2 = a^2 \cos 2\theta \text{ and } r^2 = a^2 \sin 2\theta$$

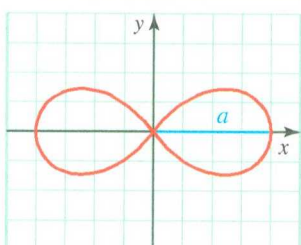


$$r = a \cos \theta; \text{ circle}$$

standard form; one petal

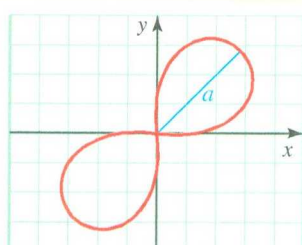


$$r = a \sin \theta; \text{ circle}$$

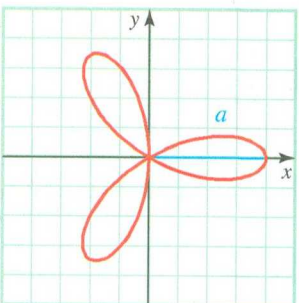
 $\frac{\pi}{2}$ rotation; one petal

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

standard form

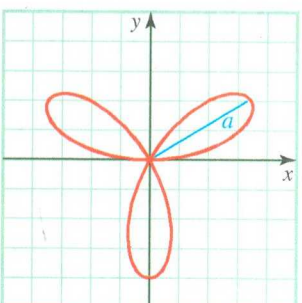


$$r^2 = a^2 \sin 2\theta$$

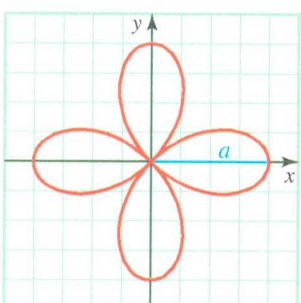
 $\frac{\pi}{4}$ rotation

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

standard form; three petals

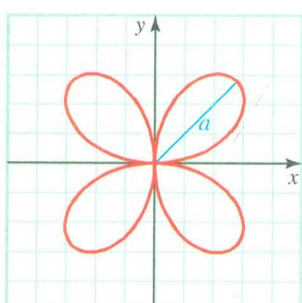


$$r = a \sin 3\theta$$

 $\frac{\pi}{6}$ rotation; three petals

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

standard form; four petals



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

 $\frac{\pi}{4}$ rotation; four petals