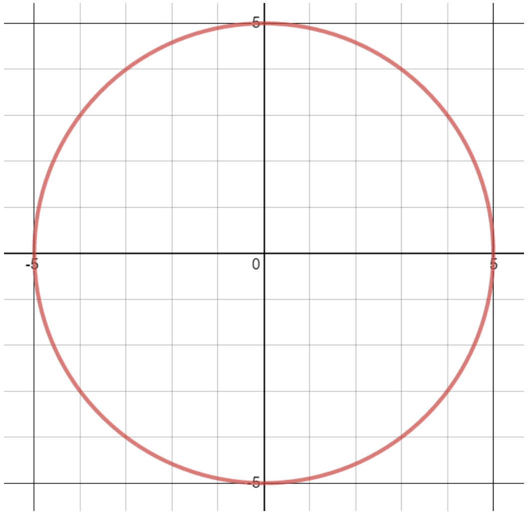
5.2) Sketching curves

Worked example	Your turn
Sketch the following curves:	Sketch the following curve:

$$r = 4$$

$$r = 6$$

$$r = 5$$



$$r = a$$

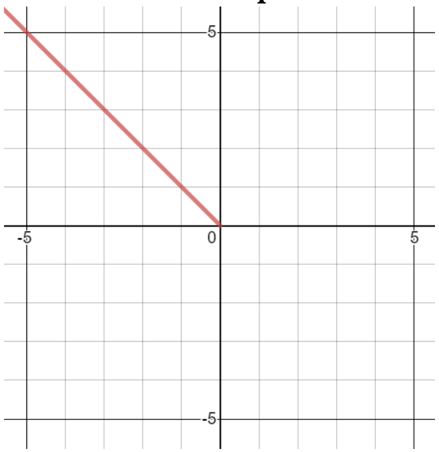
Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:

$$\theta = -\frac{3\pi}{4}$$

$$\theta = \frac{\pi}{4}$$

$$\theta = \frac{3\pi}{4}$$



$$\theta = a$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch the following curves:

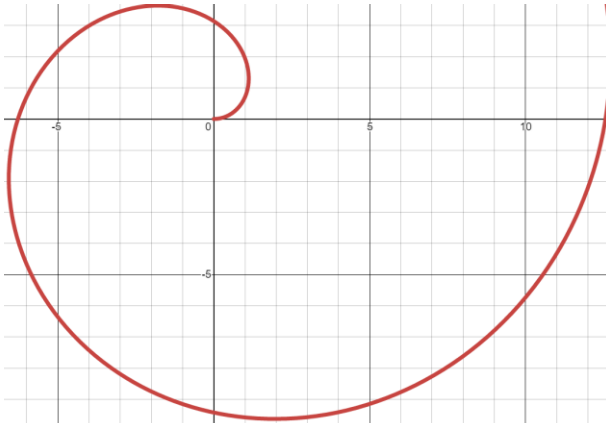
$$r = \theta$$

$$r = 3\theta$$

Your turn

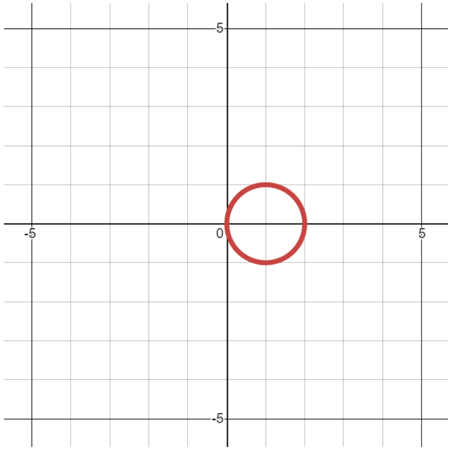
Sketch the following curves:

$$r = 2\theta$$

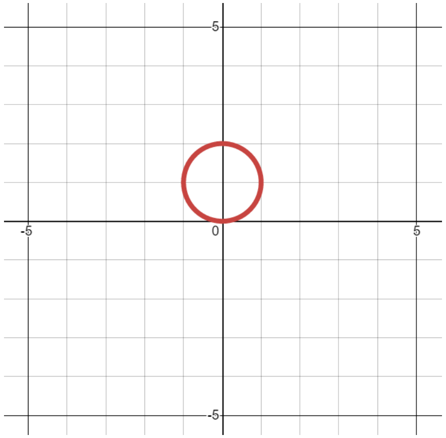


$$r = a\theta$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:
$r = \cos\theta$	$r = 2\cos\theta$
	
$r = 3\cos\theta$	$r = a\cos\theta$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:
$r = \sin\theta$	$r = 2\sin\theta$
	
$r = 3\sin\theta$	$r = a\sin\theta$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch the following curves:

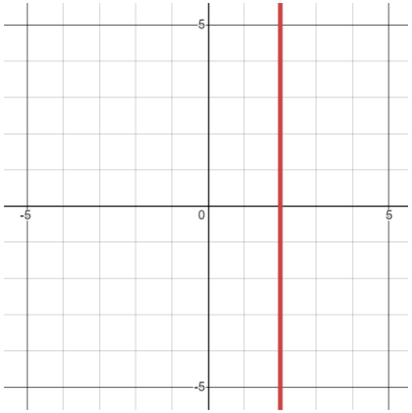
$$r = \sec\theta$$

$$r = 3\sec\theta$$

Your turn

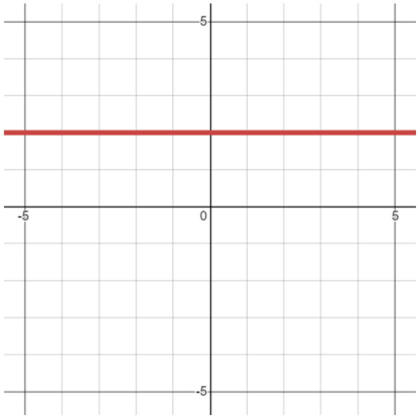
Sketch the following curves:

$$r = 2\sec\theta$$



$$r = a\sec\theta$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:
$r = cosec\,\theta$	$r = 2\,\text{cosec}\,\theta$
	
$r = 3\,cosec\,\theta$	$r = a\,\text{cosec}\,\theta$

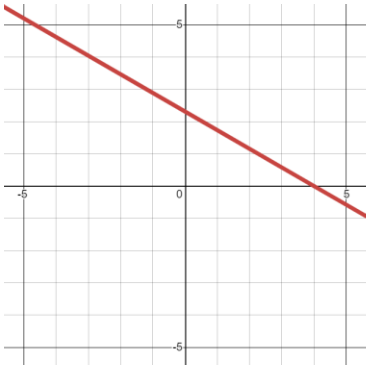
Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:

$$r = \sec\left(\theta - \frac{\pi}{4}\right)$$

$$r = 3\sec\left(\theta + \frac{\pi}{6}\right)$$

$$r = 2\sec\left(\theta - \frac{\pi}{3}\right)$$



$$r = a\sec(\theta - k)$$

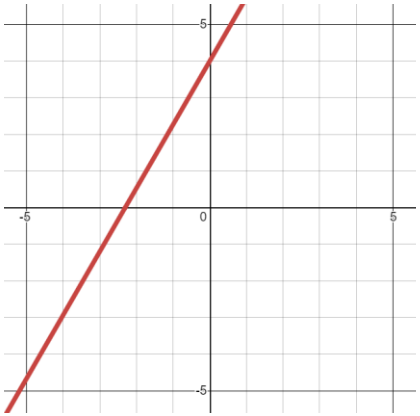
Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:

$$r = \text{cosec}\left(\theta - \frac{\pi}{4}\right)$$

$$r = 3\text{cosec}\left(\theta + \frac{\pi}{6}\right)$$

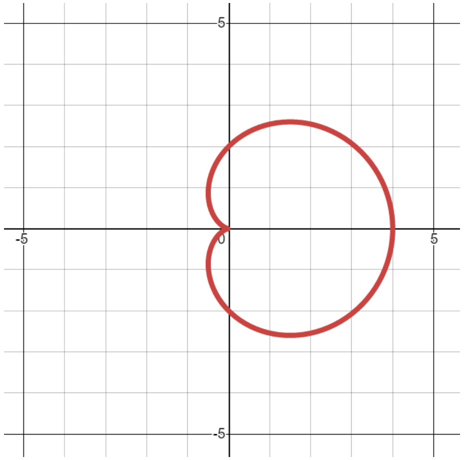
$$r = 2\text{cosec}\left(\theta - \frac{\pi}{3}\right)$$



$$r = a\,\text{cosec}(\theta - k)$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves: $r = 1 + \cos\theta$	Sketch the following curves: $r = 2(1 + \cos\theta)$

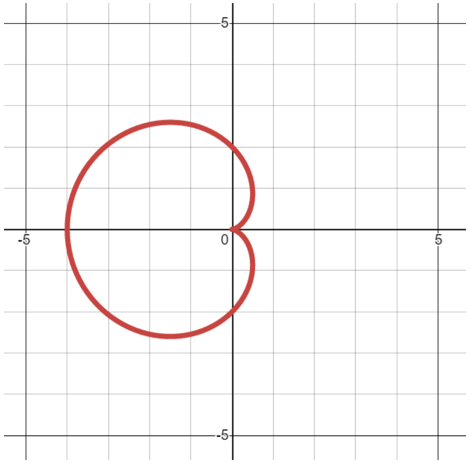


$$r = 3(1 + \cos\theta)$$

$$r = a(1 + \cos\theta)$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves: $r = 1 - \cos\theta$	Sketch the following curves: $r = 2(1 - \cos\theta)$



$r = 3(1 - \cos\theta)$	$r = a(1 - \cos\theta)$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch the following curves:

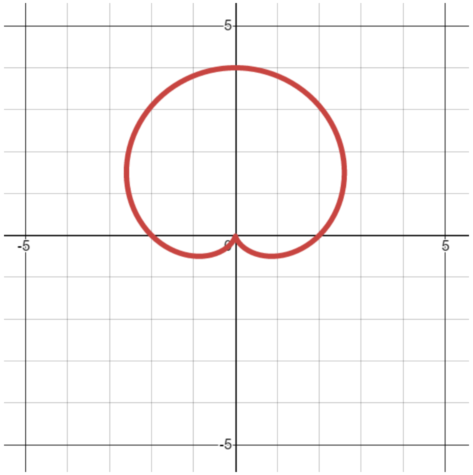
$$r = 1 + \sin\theta$$

$$r = 3(1 + \sin\theta)$$

Your turn

Sketch the following curves:

$$r = 2(1 + \sin\theta)$$



$$r = a(1 + \sin\theta)$$

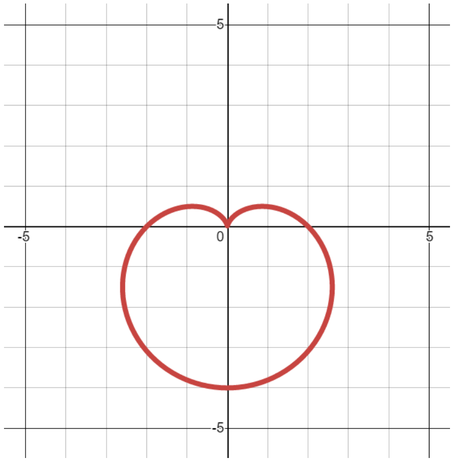
Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:

$$r = 1 - \sin\theta$$

$$r = 3(1 - \sin\theta)$$

$$r = 2(1 - \sin\theta)$$



$$r = a(1 - \sin\theta)$$

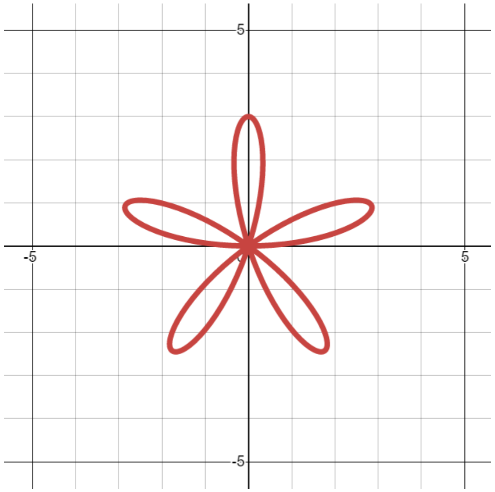
Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:

$$r = 2\sin 3\theta$$

$$r = 5\sin 7\theta$$

$$r = 3\sin 5\theta$$



$$r = a\sin n\theta$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch the following curves:

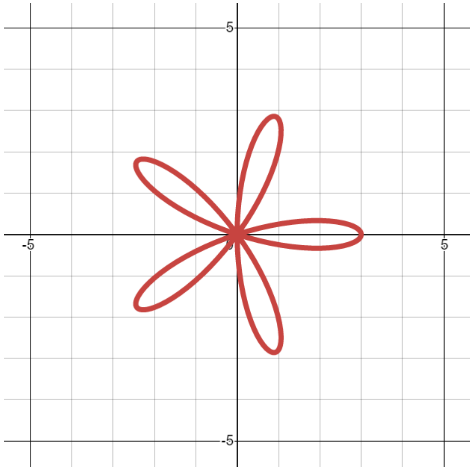
$$r = 2\cos 3\theta$$

$$r = 5\cos 7\theta$$

Your turn

Sketch the following curves:

$$r = 3\cos 5\theta$$



$$r = a\cos n\theta$$

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch the following curves:

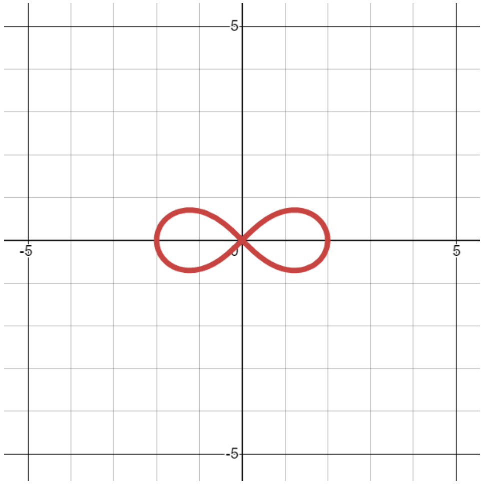
$$r^2 = 16\cos 2\theta$$

$$r^2 = 9\cos 2\theta$$

Your turn

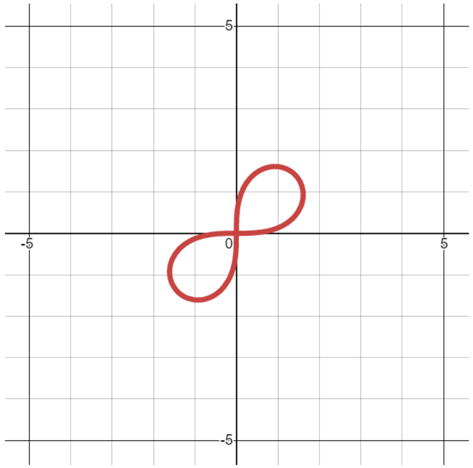
Sketch the following curves:

$$r^2 = 4\cos 2\theta$$



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

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:
$r^2 = 16\sin 2\theta$	$r^2 = 4\sin 2\theta$ 
$r^2 = 9\sin 2\theta$	$r^2 = a^2\sin 2\theta$

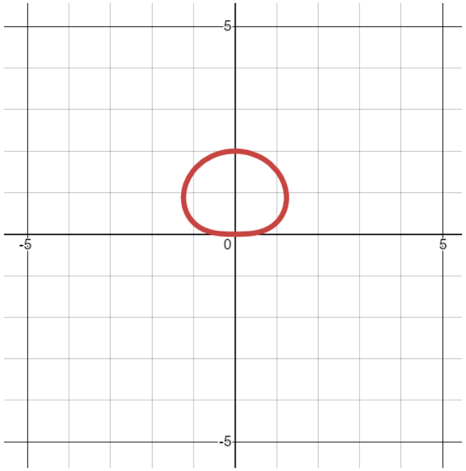
Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Sketch the following curves:	Sketch the following curves:

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

$$r^2 = 9\cos\theta$$

$$r^2 = 4\cos\theta$$



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

Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch the following curves:

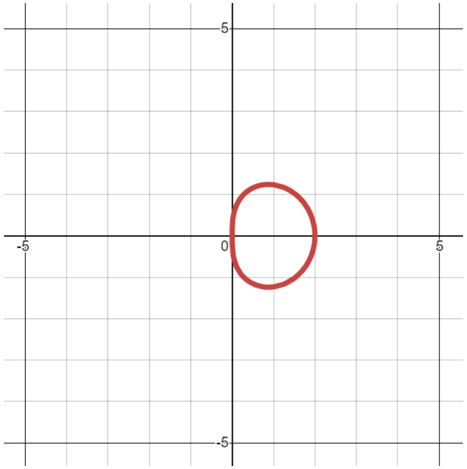
$$r^2 = 16\sin\theta$$

$$r^2 = 9\sin\theta$$

Your turn

Sketch the following curves:

$$r^2 = 4\sin\theta$$

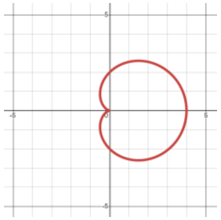


$$r^2 = a^2\sin 2\theta$$

Graphs used with permission from DESMOS: https://www.desmos.com/

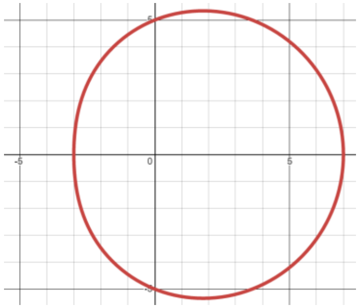
Worked example	Your turn
Sketch: $r = 6(3 + 3\cos\theta)$	Sketch: $r = a(2 + 2\cos\theta)$

Sketches with intercepts and axes labelled. General shapes:



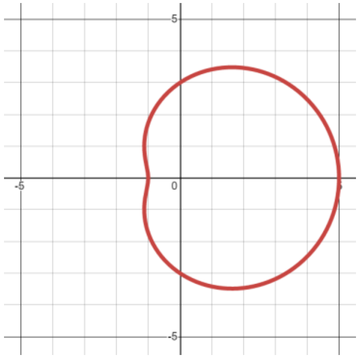
$r = 5(3 + 2\cos\theta)$

$r = a(5 + 2\cos\theta)$



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

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



Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example

Sketch:

$$r = 6(3 + 3\sin\theta)$$

$$r = 5(3 + 2\sin\theta)$$

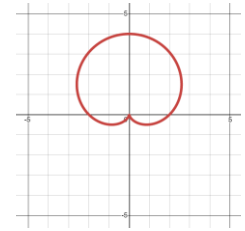
$$r = 4(3 + \sin\theta)$$

Your turn

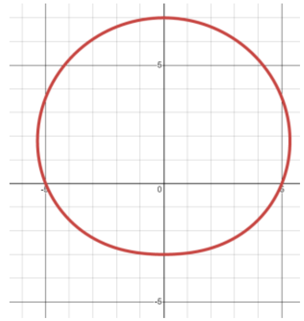
Sketch:

$$r = a(2 + 2\sin\theta)$$

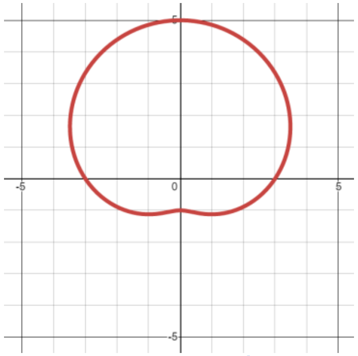
Sketches with intercepts and axes labelled. General shapes:



$$r = a(5 + 2\sin\theta)$$



$$r = a(3 + 2\sin\theta)$$



Graphs used with permission from DESMOS: https://www.desmos.com/

Worked example	Your turn
Show on an Argand diagram the locus of points given by the values of z satisfying $\lvert z+4+3i\rvert = 5$ Show that this locus of points can be represented by the polar curve $r = -8\cos\theta - 6\sin\theta$	Show on an Argand diagram the locus of points given by the values of z satisfying $\lvert z-3-4i\rvert = 5$ Show that this locus of points can be represented by the polar curve $r = 6\cos\theta + 8\sin\theta$ Shown