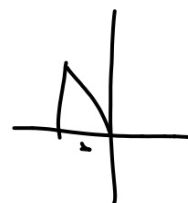
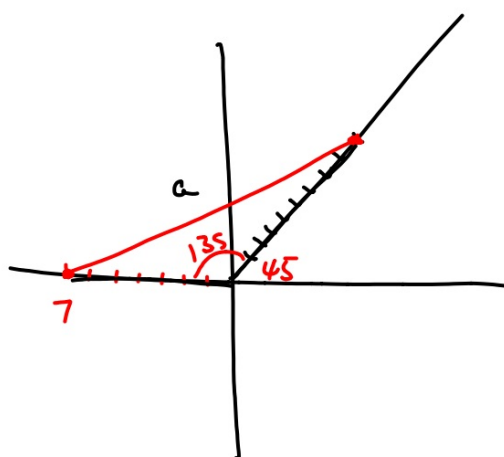


Trig 9.2

Graph polar equations

→ Solve systems of polar equations

- $R^M$  {
- rose
- lemniscate
- limaçon limaçon
- cardioid
- spiral of Archimedes (radians)

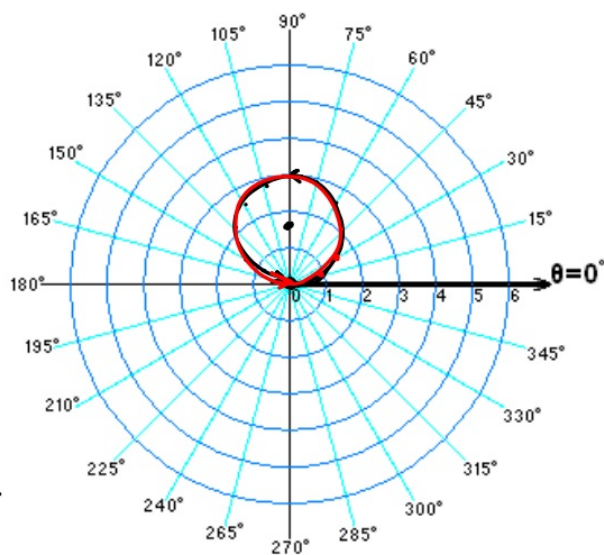


$$\begin{aligned} a^2 &= 7^2 + a^2 - (2 \cdot 7 \cdot a \cdot \cos 135^\circ) \\ &= 49 + 81 - 89.09 \\ &= 219.09 \end{aligned} \quad 14.8$$

activity: polar graphs and gallery walk

Graph  $r = 3\sin\theta$

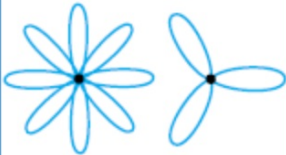

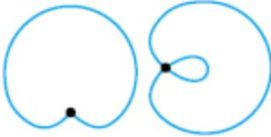


Angle	$\sin\theta$	$3\sin\theta$
0	0	0
15	0.25	0.75
30	0.5	1.5
45	0.71	2.1
60	0.86	2.58
75	0.97	2.9
90	1	3
105	.97	2.9
120	.87	2.6
135	.71	2.1
150	.5	1.5
165	.26	0.75
180	0	0
195	-.25	-.75
210	-.5	-.75
225	-.71	-.2.1
240		
255		
270		
285		
300		
315		
330		
345		
360		



Graphing activity:

Gallery Walk

### Classical Curves

Curve	✓ rose	lemniscate (pronounced lehm NIHS kuht)	limaçon ✓ (pronounced lee muh SOHN)	cardioid (pronounced KARD ee oyd)	spiral of Archimedes (pronounced ar kih MEED eez)
Polar Equation	$r = a \cos n\theta$ $r = a \sin n\theta$ <i>n is a positive integer.</i>	$r^2 = a^2 \cos 2\theta$ $r^2 = a^2 \sin 2\theta$	$r = a + b \cos \theta$ $r = a + b \sin \theta$	$r = a + a \cos \theta$ $r = a + a \sin \theta$	$r = a\theta$ ( $\theta$ in radians)
General Graph					

- 4** Graph the system of polar equations. Solve the system using algebra and trigonometry and compare the solutions to those on your graph.

$$r = 3 - 3 \sin \theta$$

$$r = 4 - \sin \theta$$