

Instructions: Show all work. Use exact answers unless specifically asked to round. Answer all parts of each question.

1. Convert the equation $x^2 = 6y$ into polar coordinates and solve for r .

$$r^2 \cos^2 \theta = 6r \sin \theta$$

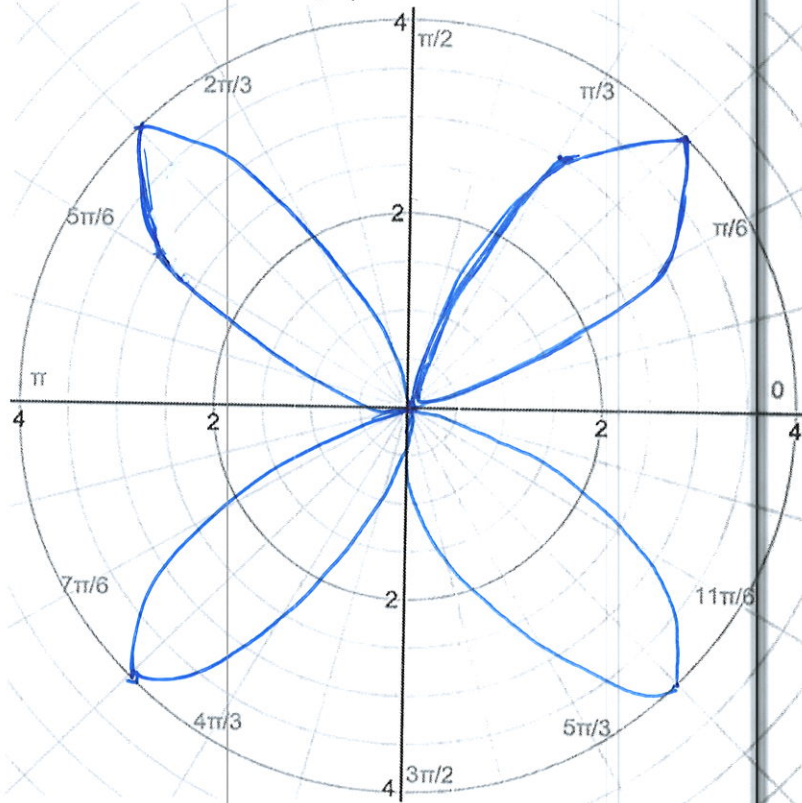
$$r = 6 \tan \theta \sec \theta$$

2. Convert the equation $r = 8 \cos \theta + 2 \sin \theta$ into rectangular coordinates.

$$r^2 = 8r \cos \theta + 2r \sin \theta$$

$$x^2 + y^2 = 8x + 2y$$

3. Plot $r = 4 \sin 2\theta$ on the graph below.



θ	r
$-\pi/2$	0
$-\pi/3$	-3.46
$-\pi/4$	-4
$-\pi/6$	-3.46
0	0
$\pi/6$	3.46
$\pi/4$	4
$\pi/3$	3.46
$\pi/2$	0