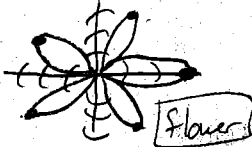
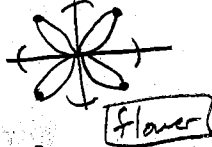


Identify and graph the following polar equations.

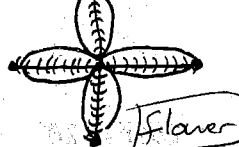
1) $r = 3 \cos(5\theta)$



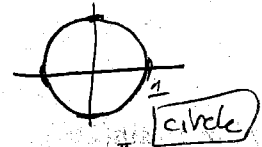
2) $r = \sin(2\theta)$



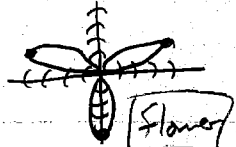
3) $r = 9 \cos(2\theta)$



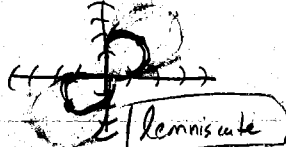
4) $r = -1$



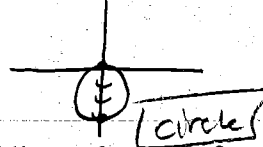
5) $r = 4 \sin(3\theta)$



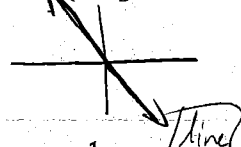
6) $r^2 = 4 \sin(2\theta)$



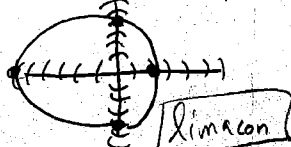
7) $r = -3 \sin \theta$



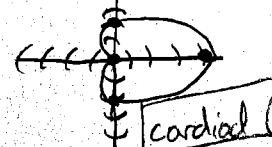
8) $\theta = -\frac{\pi}{3}$



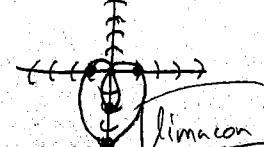
9) $r = 4 - 2 \cos \theta$



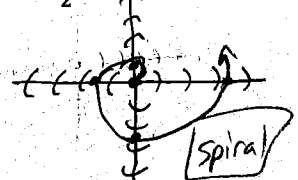
10) $r = 2 + 2 \cos \theta$



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



12) $r = \frac{1}{2} \theta$



For each of the following equations, find an equivalent equation in rectangular form.

13) $r = \frac{2}{1 - \cos \theta}$
 $r - r \cos \theta = 2$
 $\sqrt{x^2 + y^2} - x = 2$

14) $r(\cos \theta + \sin \theta) = 2$
 $r \cos \theta + r \sin \theta = 2$
 $x + y = 2$

For each of the following equations, find an equivalent equation in polar form.

15) $(x - 5)^2 + y^2 - 25 = 0$
 $x^2 - 10x + 25 + y^2 - 25 = 0$
 $x^2 + y^2 - 10x = 0$
 $r^2 = 10r \cos \theta$
 $r = 10 \cos \theta$

16) $y^2 = 14$
 $r^2 \sin^2 \theta = 14$
 $r^2 = 14 \csc^2 \theta$
 or $r = \sqrt{14} \csc \theta$

Change the following rectangular coordinates to polar coordinates.

17) $(3, -3)$
 $(\frac{3\sqrt{2}}{2}, -\frac{\pi}{4})$

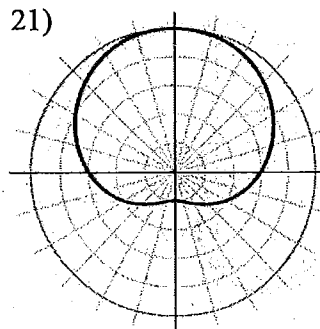
18) $(-4, 4\sqrt{3})$
 $(8, \frac{2\pi}{3})$

Change the following polar coordinates to rectangular coordinates.

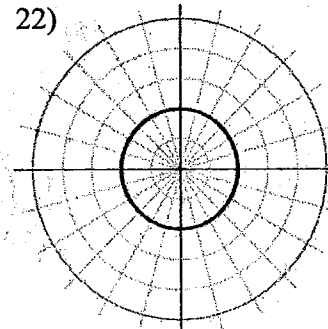
19) $(5, \frac{\pi}{6})$
 $(\frac{5\sqrt{3}}{2}, \frac{5}{2})$

20) $(-2, \frac{3\pi}{4})$
 $(\sqrt{2}, -\sqrt{2})$

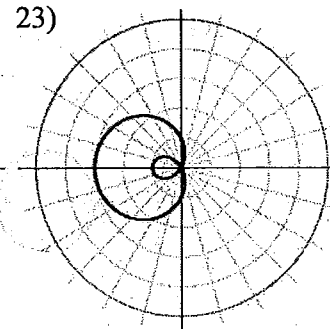
Give the equation for the following graphs.



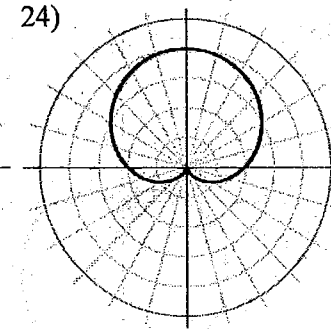
$r = 3 + 2 \sin \theta$



$r = 2$



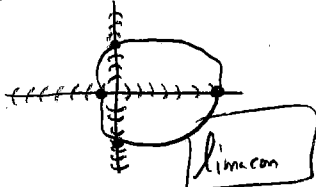
$r = 1 + 2 \cos \theta$



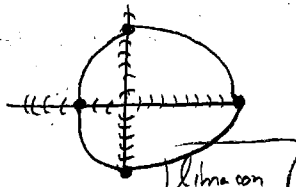
$r = 2 + 2 \sin \theta$

Identify and graph the following polar equations.

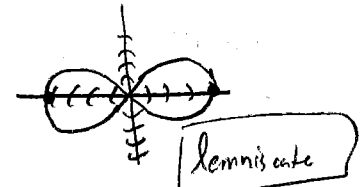
25) $r = 4 + 3 \cos \theta$



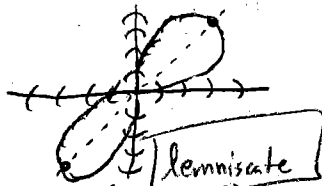
26) $r = 6 + 3 \cos \theta$



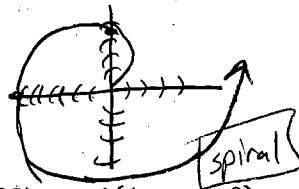
27) $r^2 = 16 \cos(2\theta)$



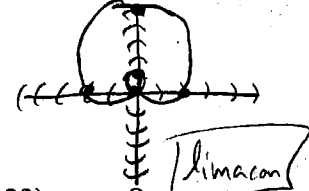
28) $r^2 = 16 \sin(2\theta)$



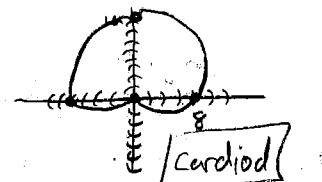
29) $r = 2\theta$



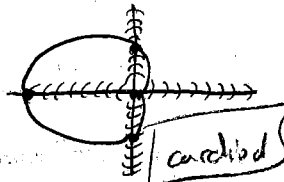
30) $r = 2 + 3 \sin \theta$



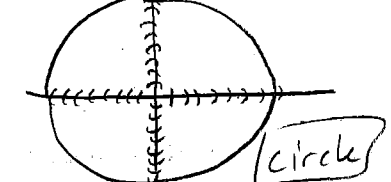
31) $r = 8(1 + \sin \theta)$



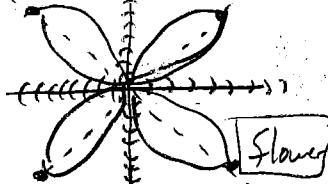
32) $r = 4(1 - \cos \theta)$



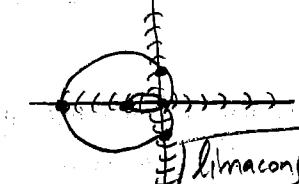
33) $r = -8$



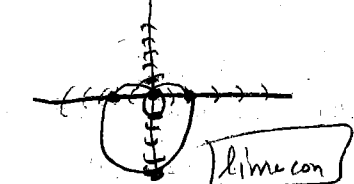
34) $r = 8 \sin(2\theta)$



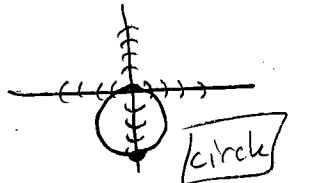
35) $r = 2 - 4 \cos \theta$



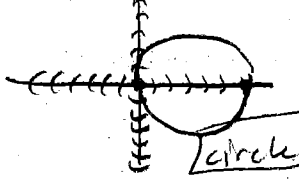
36) $r = 2 - 3 \sin \theta$



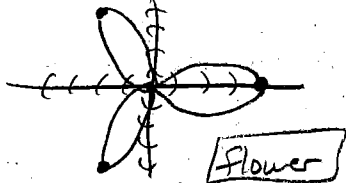
37) $r = -4 \sin \theta$



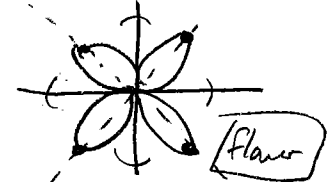
38) $r = 6 \cos \theta$



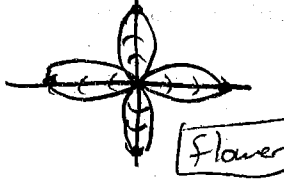
39) $r = 4 \cos(3\theta)$



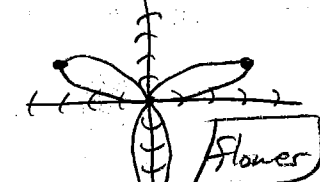
40) $r = \sin(2\theta)$



41) $r = 3 \cos(2\theta)$

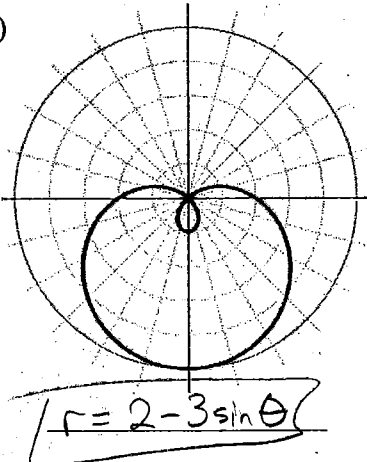


42) $r = 4 \sin(3\theta)$

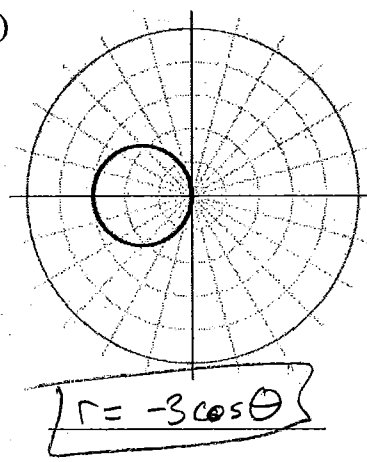


Give the equation for the following graphs.

43)



44)



45)

