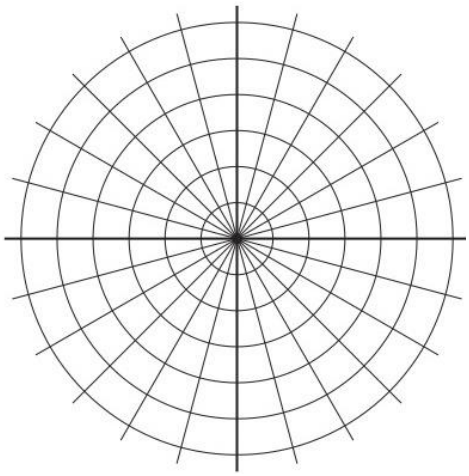
Precalculus

Polar Review

Plot each polar coordinate on the graph.



1. $A(4, 270°)$
2. $B(-3, \pi)$
3. $C\left(5, \frac{4\pi}{3}\right)$
4. $D(-3, 120°)$

Convert each of the following rectangular coordinates to polar coordinates. Answers for θ should be in radians, exact answers if possible. If you need to have decimals, please round to the nearest thousandth.

5. $(-3, 3)$
6. $(-2, -2\sqrt{3})$
7. $(-0.8, -2.1)$
8. $(-2.3, 0.2)$

Convert each of the following polar coordinates to rectangular coordinates. Decimals should be rounded to the nearest thousandth.

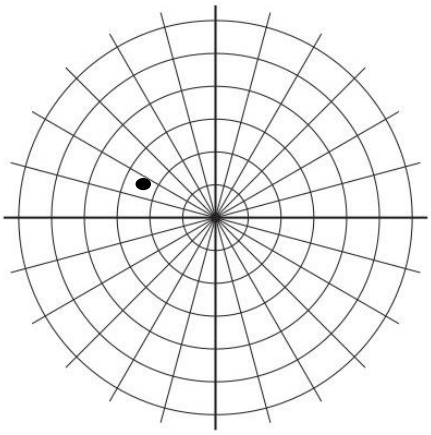
9. $(5, 300°)$
10. $\left(4, \frac{3\pi}{2}\right)$
11. $(-3.1, 182°)$
12. $(8.1, 5.2)$

Find the other 3 polar coordinates that represent the same point for $-2\pi \leq \theta \leq 2\pi$.

13. $\left(4, \frac{3\pi}{4}\right)$

14. $\left(-2, -\frac{2\pi}{3}\right)$

15. Find all polar coordinates for the point such that $-2\pi \leq \theta \leq 2\pi$.



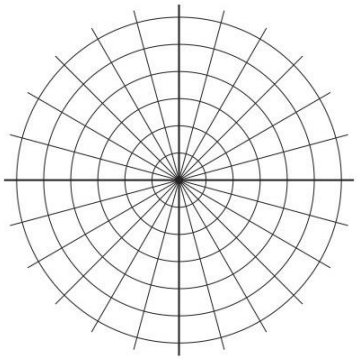
Find the other 3 polar coordinates that represent the same point for $-360° \leq \theta \leq 360°$.

16. $(3, -20°)$

17. $(-4, 103°)$

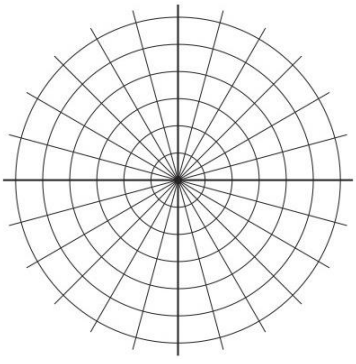
Graph each polar equation. Then convert the equation to rectangular form.

18. $r = 3$



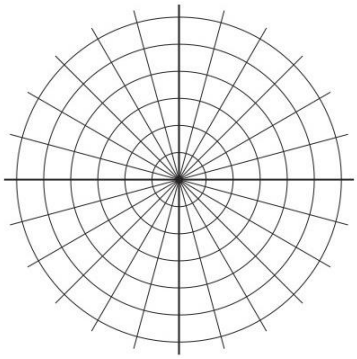
rectangular equation:

19. $r = 5$



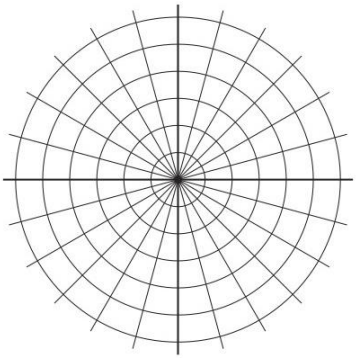
rectangular equation:

20. $\theta = \frac{2\pi}{3}$



rectangular equation:

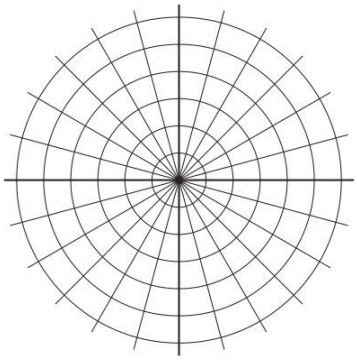
21. $\theta = 30°$



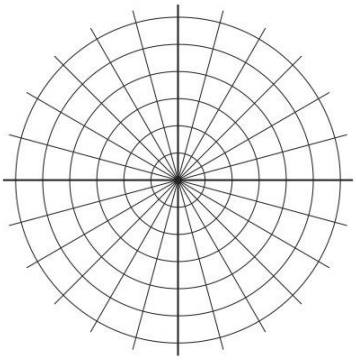
rectangular equation:

Convert the following polar equations into rectangular equations so that you can graph them.

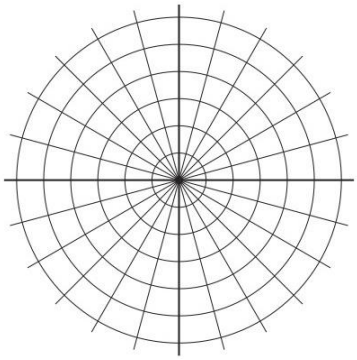
22. $r = 3\sec\theta$



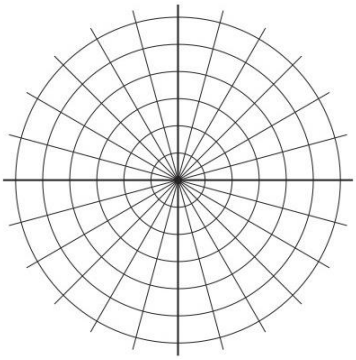
23. $r = -5\csc\theta$



24. $r = -\frac{1}{\cos\theta}$



25. $r = \frac{4}{\sin\theta}$



26. $r = 4\sin\theta$

27. $r = -6\cos\theta$

28. $r = 5\cos\theta$

29. $r = -2\sin\theta$

Convert each of the following polar equations to rectangular form (standard conic form). Classify the conic.

30. $r = 2\sin\theta - 6\cos\theta$

31. $r = \frac{1}{1+\cos\theta}$

32. $r = \frac{3}{5-2\sin\theta}$

33. $r = \frac{2}{1+4\cos\theta}$

Convert each of the following rectangular equations to polar form.

34. $\frac{y^2}{4} = x$

35. $(x-7)^2 + (y+2)^2 = 53$

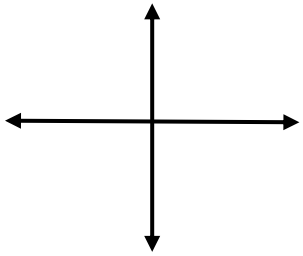
36. $y = -x$

37. $y = \frac{\sqrt{3}}{3}x$

Identify and sketch a graph for the following.

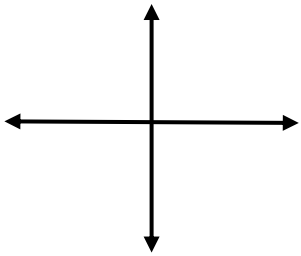
38. $r = 2 - \cos\theta$

identification:



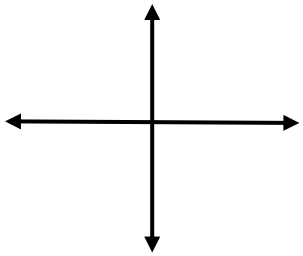
39. $r = 1 - 2\sin\theta$

identification:



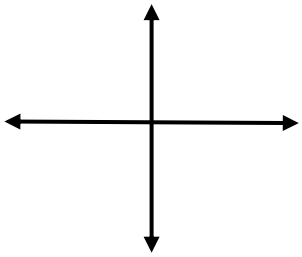
40. $r = 4 + 2\sin\theta$

identification:



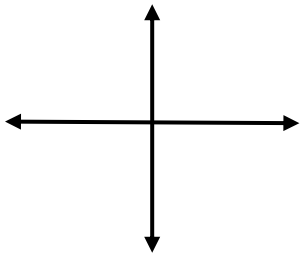
41. $r = 2\sin 2\theta$

identification:



42. $r = 3\cos 4\theta$

identification:



43. $r = 6\sin 3\theta$

identification: