Precalculus Review Chapter 11 page 1 _____

Find the inclination of each of the following lines. Show your work. Your answer must be greater than or equal to 0° but less than 180°. Where appropriate, round to the nearest tenth of a degree.

1. $3x + 2y = 6$

2. $5x - 3y = 9$

3. $x = 5$

4. $y = -3$

Find an angle between the two given lines. Show your work. Your answer must be greater than 0° but less than or equal to 90°. Where appropriate, round to the nearest tenth of a degree.

5. $5x + y = 4$
$2x - 5y = 10$

6. $x - 3y = 3$
$x + 3y = 0$

7. $-2x + y = 1$
$x + 2y = 6$

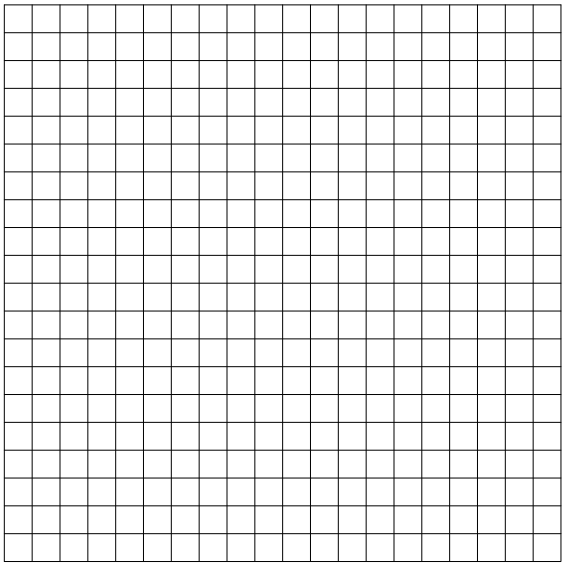
8. $x - 5y = 10$
$x - 6y = 12$

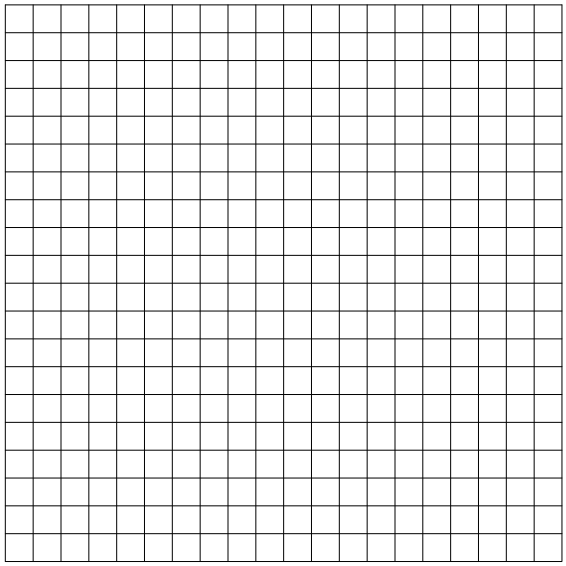
Precalculus Review Chapter 11 page 2

Identify each equation as that of a circle, ellipse, hyperbola, or parabola. Express the equation in standard form and sketch its graph. Show your work neatly organized.

9. $x^2 - 6x + 3y + 15 = 0$

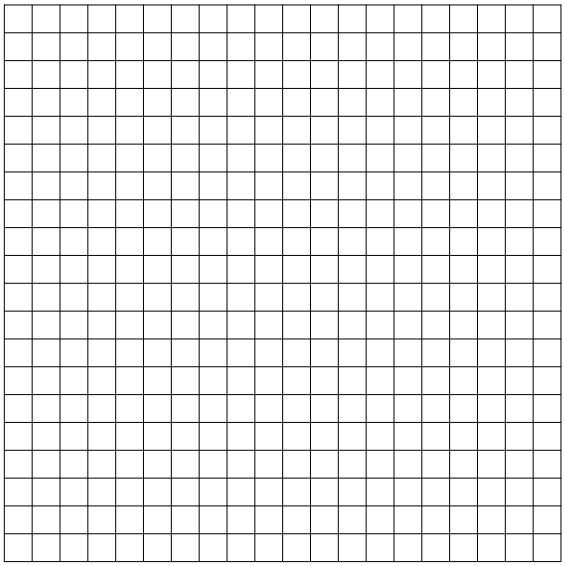
10. $x^2 + y^2 - 2x - 24 = 0$

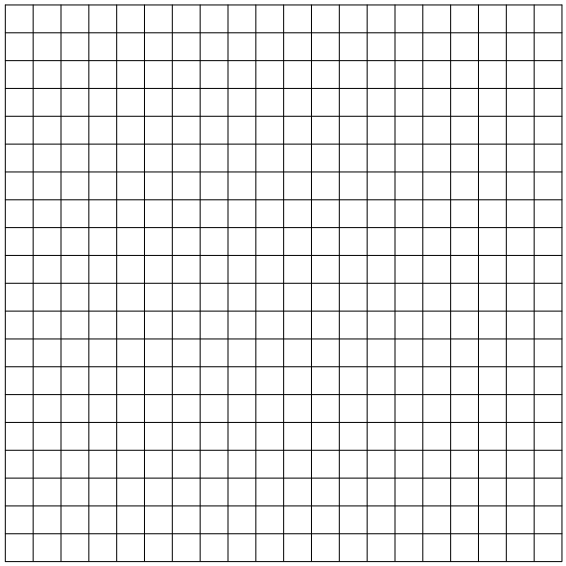




11. $x^2 + 2y^2 + 4x - 12y + 16 = 0$

12. $9x^2 - 4y^2 - 18x - 8y - 31 = 0$





Precalculus Review Chapter 11 page 3

Identify each equation as that of an ellipse, a hyperbola, or a parabola. Do not graph. Show how you got your answer.

13. $x^2 - 10xy + y^2 + 1 = 0$

14. $5x^2 - 2xy + 5y^2 - 12 = 0$

15. $16x^2 - 24xy + 9y^2 - 60x - 80y + 100 = 0$

16. $xy - 12 = 0$

Find two set of polar coordinates (r, θ) for each of the following points. You are given the Cartesian (rectangular) coordinates of the point (x, y). Express θ in degrees where $0 \leq \theta < 360°$. Where appropriate, round to three significant digits. Show your work.

17. (5, 0) _____ _____

18. (0, -3) _____ _____

19. (2, 2) _____ _____

20. (-3, 3) _____ _____

21. (3, -4) _____ _____

22. (-5, 12) _____ _____

23. (-1, 3) _____ _____

24. (4, 2) _____ _____

You are given polar coordinates of the point (r, θ). Find the Cartesian coordinates (x, y). Where necessary, round to three significant digits.

25. (3, 0°) _____

26. (-4, 45°) _____

27. (-6, 90°) _____

28. (5, 135°) _____

29. (4, 150°) _____

30. (-6, 240°) _____

31. (2.828, 315°) _____

32. (3, 340°) _____

Precalculus Review Chapter 11 page 4

Convert each of the following equations to polar form.

33. $x^2 + y^2 = 25$

34. $y = x$

35. $y = 3$

36. $x = 0$

Convert each of the following polar equations to rectangular form.

37. $\theta = 3\pi/4$

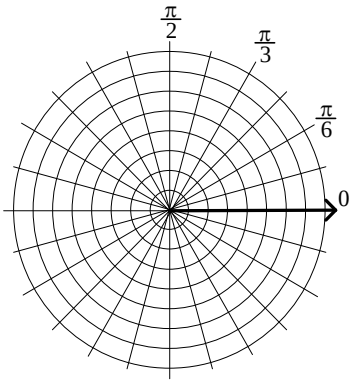
38. $r = 3$

39. $r = 2\sin\theta$

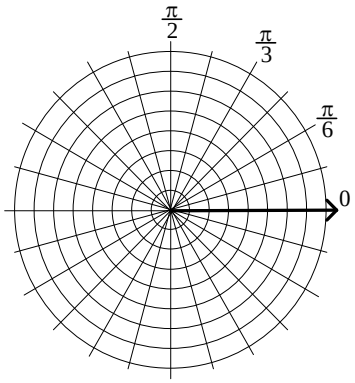
40. $r = 2\sec\theta$

Graph each of the following equations.

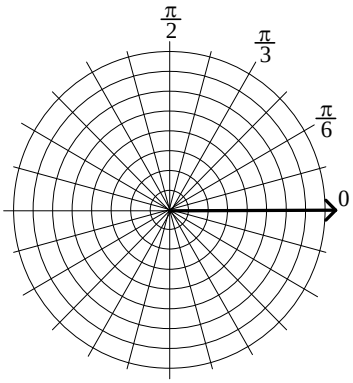
41. $r = 4$



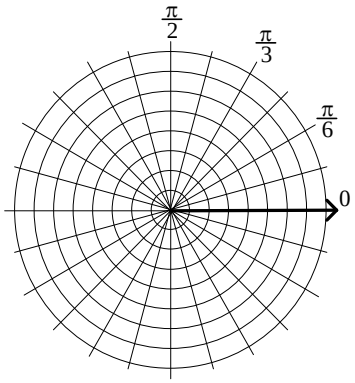
42. $\theta = \pi/12$



43. $r = 4\sin\theta$

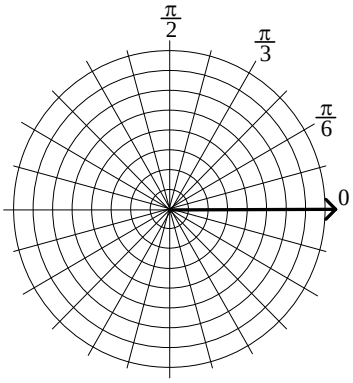


44. $r = 2 - 4\sin\theta$

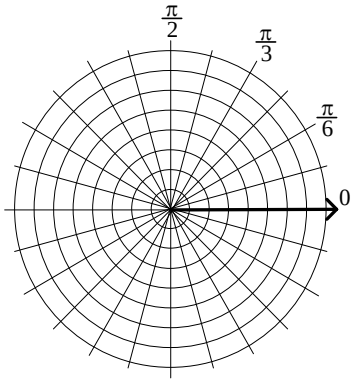


Graph each of the following equations.

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



46. $r = 5\sin 2\theta$



Find the eccentricity, e, of each of the following, and use it to identify each equation as that of an ellipse, a hyperbola, or a parabola. Show your work.

47. $r = \dfrac{3}{2 - 6\sin\theta}$

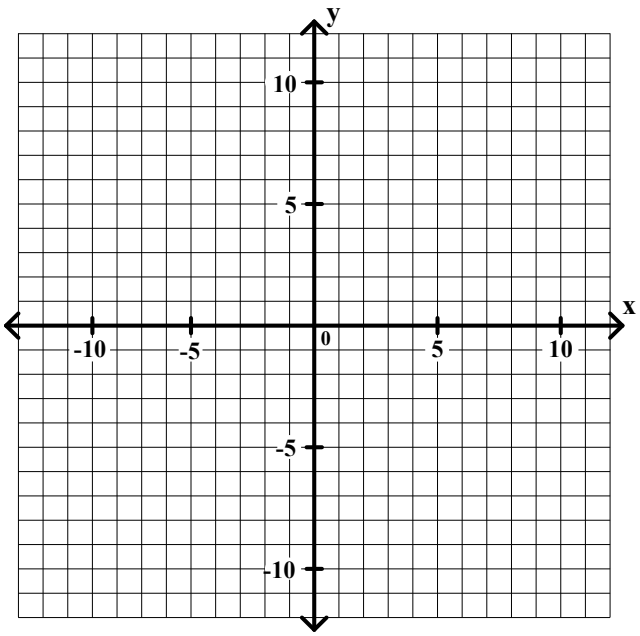
48. $r = \dfrac{4}{4 + 2\cos\theta}$

49. $r = \dfrac{3}{1 + \cos\theta}$

Precalculus Review Chapter 11 page 6

Sketch the plane curves represented by each of the following parametric equations, showing the orientation (direction). Also, write an equation that gives the corresponding relationship between x and y (eliminate the parameter). Show your work neatly organized. Assume that $t \geq 0$.

50. $x = t$
$y = 2t$



51. $x = 4\cos t$
$y = 4\sin t$