Conics- The Ellipse

Write each of the following in standard form. Identify the center of each ellipse, as well as whether the ellipse has a Horizontal or Vertical Major Axis.

1. \(9x^2 + 4y^2 + 54x - 48y + 189 = 0\)
2. \(x^2 + 4y^2 - 10x - 16y + 25 = 0\)

3. \(4x^2 + 3y^2 + 16x + 42y + 151 = 0\)
4. \(4x^2 + 25y^2 + 16x + 150y + 141 = 0\)

5. \(x^2 + 4y^2 - 14x - 16y + 29 = 0\)
6. \(15x^2 + 4y^2 - 90x - 48y + 219 = 0\)

Graph each of the following. Label the center, the four vertices and the foci.

7. \(\frac{(x-7)^2}{9} + \frac{(y+1)^2}{64} = 1\)
8. \(\frac{(x+3)^2}{16} + \frac{(y+2)^2}{4} = 1\)

9. \(25x^2 + 4y^2 - 150x - 8y + 129 = 0\)
10. \(9x^2 + 16y^2 - 72x - 96y + 144 = 0\)

11. \(9x^2 + y^2 + 72x + 6y + 144 = 0\)
12. \(x^2 + 9y^2 + 2x + 54y + 46 = 0\)

13. \(9x^2 + 49y^2 + 294y = 0\)
14. \(25x^2 + 4y^2 - 200x + 300 = 0\)

15. \(9x^2 + 16y^2 - 54x - 64y + 1 = 0\)
16. \(9x^2 + y^2 - 72x + 8y + 124 = 0\)
Find the equation of the ellipse given the following.

17. Find the equation of the ellipse in standard from that has a center at (-3,2), a vertical major axis of 16 units, and a horizontal minor axis of 10 units.

18. Find the equation of the ellipse in standard from that has a center at (4,7), a vertical minor axis of 12 units, and a horizontal major axis of 20 units.

19. Find the equation of the ellipse in standard from that has a center at (-2,-5), a vertical major axis of 10 units, and a horizontal minor axis of 4 units.

20. Find the equation of the ellipse that has the center at the origin, x-intercepts of (-3,0) and (3,0), and y-intercepts of (0,7) and (0,-7).

21. Find the equation of the ellipse that has the center at the origin, an x-intercept of (12,0), and a y-intercept of (0,3).

22. Find the equation of an ellipse that has vertices of (-1,5), (3,13), (7,5) and (3,-3).

23. Find the equation of an ellipse that has vertices of (-7,7), (-2,9), (3,7) and (-2,5).

24. Find the equation of an ellipse that has vertices of (1,-6), (5,3), (9,-6) and (5,-15).

25. Find the equation of an ellipse that has foci of (6,0) and (6,6) and the sum of the focal radii is 10.