

I. Definitions

1. Write out the definition of a circle.
2. Write out the definition of an hyperbola.
3. Write the general equation for an ellipse with center (h, k) and foci (0, c) and (0, -c)

II. Matching (Answers may be used more than once)

- |          |                                      |              |
|----------|--------------------------------------|--------------|
| _____ 4. | $\frac{x^2}{9} + \frac{y^2}{16} = 1$ | A. Line      |
| _____ 5. | $x^2 + y^2 = 9$                      | B. Hyperbola |
| _____ 6. | $x + y = 9$                          | C. Ellipse   |
| _____ 7. | $\frac{x^2}{9} - \frac{y^2}{16} = 1$ | D. Circle    |

III. Short Answer

- \_\_\_\_\_ 8. Determine the length of the segment joining (-2, 3) and (2, -1).
- \_\_\_\_\_ 9. Determine the equation of the circle with center (0, 3) and radius 6.

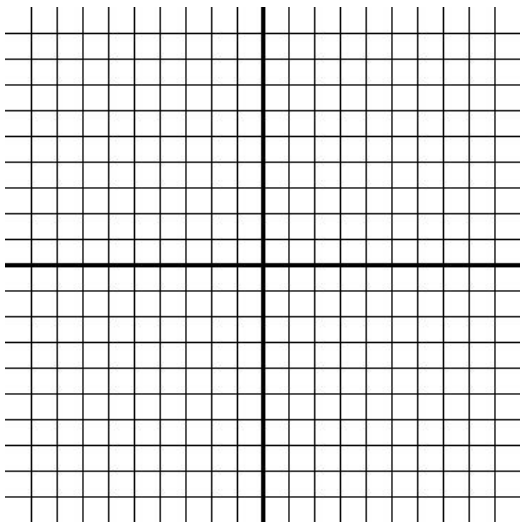
\_\_\_\_\_ 10. Determine the coordinates of the midpoint of the segment joining the points (7, -5) and (-1, -11).

\_\_\_\_\_ 11. Determine the equation of an ellipse with vertices (0, 0), (0, 10), (3, 5), and (-3, 5).

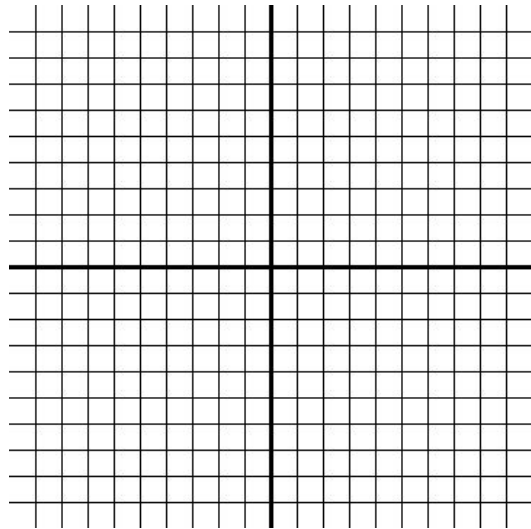
\_\_\_\_\_ 12. Determine the equation of a hyperbola whose vertices are  $(0, 2\sqrt{5})$  and  $(0, -2\sqrt{5})$ , and whose foci are  $(0, -3\sqrt{5})$  and  $(0, 3\sqrt{5})$ .

IV. Sketch each of the following on the axes provided:

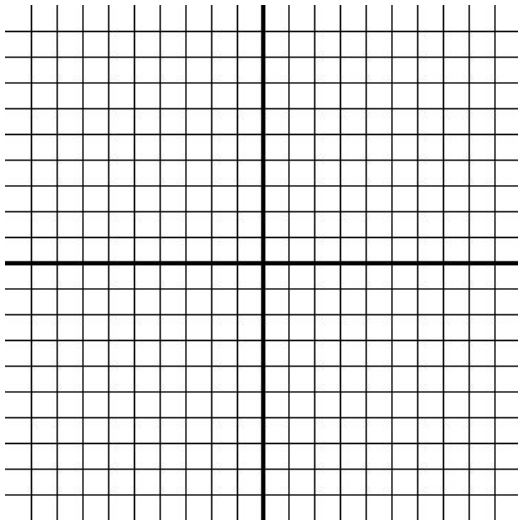
13.  $(x - 2)^2 + (y + 3)^2 = 9$



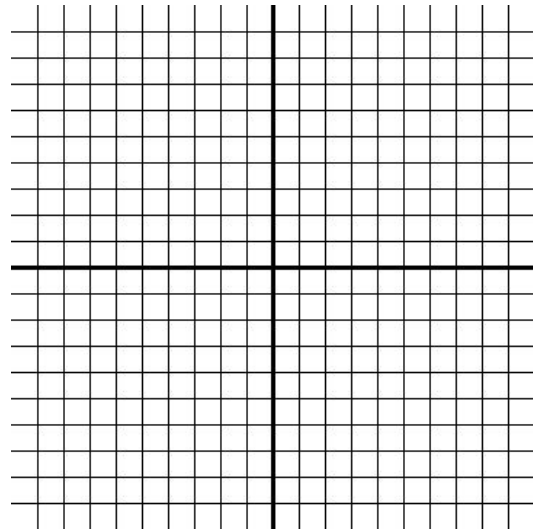
14.  $25x^2 + 9(y - 4)^2 = 144$



15.  $\frac{x^2}{25} - \frac{y^2}{9} = 1$



16.  $x^2 + 6x + y^2 + 4y = 3$



V. Short Answer

17-20. Given the equation of the ellipse  $9x^2 + y^2 - 18x + 2y + 9 = 0$

Determine the following:

\_\_\_\_\_ 17. Coordinates of the Center

\_\_\_\_\_ 18. Coordinates of the Foci

\_\_\_\_\_ 19. Eccentricity

\_\_\_\_\_ 20. The equation of the ellipse in standard form