Algebra II Test Chapter 12 Name _____

I. Definitions

1. Write out the definition of a parabola.

2. Write out the definition of an ellipse.

3. Write the general equation for a circle with center at (h, k) and radius r.

II. Multiple Choice

_____ 4. Which is the center of the circle $x^2 + y^2 + 4x - 8y + 10 = 0$?

A (2, 4) B (-2, 4) C (4, 2) D (4, -2)

_____ 5. Which are the solutions of the system?

$$\begin{cases} 2x^2 + 3y^2 = 17 \\ x^2 + y^2 = 7 \end{cases}$$

I. $\left(2, \sqrt{3}\right)$ II. $\left(2, -\sqrt{3}\right)$ III. $\left(-2, \pm\sqrt{3}\right)$

A. I only B. III only C. I and III only D. I, II, and III

_____ 6. Which are the foci of the hyperbola $16x^2 - 9y^2 = -144$?

A. $\left(\pm 8, 0\right)$ B. $\left(0, \pm 4\right)$ C. $\left(\pm 5, 0\right)$ D. $\left(0, \pm 5\right)$

_____ 7. Identify the conic section represented by the equation $x^2 + 6x - 4y^2 = 9$

A. Parabola B. Circle C. Ellipse D. Hyperbola

_____ 8. Identify the conic section represented by the equation $x^2 - 6x + 4y^2 + 2x = 9$

A. Parabola B. Circle C. Ellipse D. Hyperbola

_____ 9. Identify the conic section represented by the equation $x^2 + 6x - 4y = 9$

A. Parabola B. Circle C. Ellipse D. Hyperbola

_____ 10. Identify the conic section represented by the equation $x^2 + 6x + y^2 - 18y = 9$

A. Parabola B. Circle C. Ellipse D. Hyperbola

III. Short Answer

_____ 11. Choose ***one*** of the following:

A) The center of a circle is (5, -3), and one endpoint of a diameter is (9, 6). Determine the other endpoint.

B) Determine ***k*** if the distance between (-4, -3) and (-7, ***k***) is $\sqrt{130}$.

_____ 12. Determine the equation of a circle with center (-1, 3) and radius 7.

_____ 13. Determine the equation of a parabola with focus (4, 9) and vertex (4, 5).

_____ 14. Determine the equation of an ellipse with center (-3, 2), minor axis = 10, and one focus (0,2).

_____ 15. Solve the system:

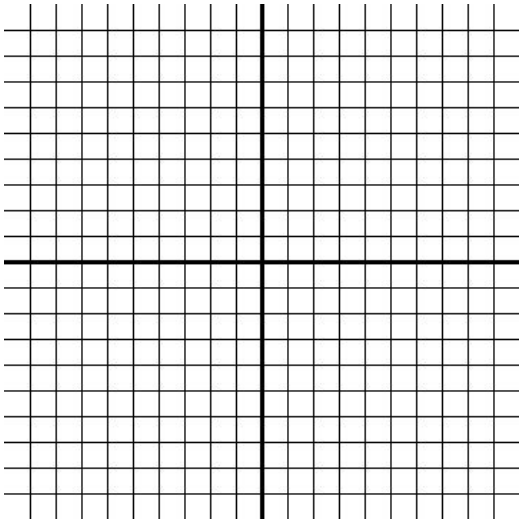
$$\begin{cases} y^2 + 4x = 21 \\ y - 2x + 3 = 0 \end{cases}$$

_____ 16. Solve the system:

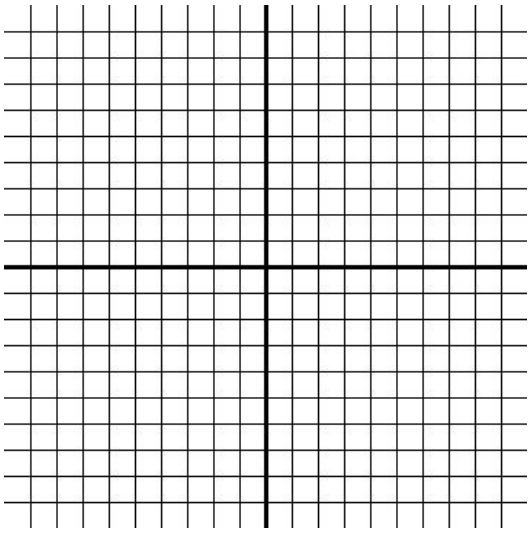
$$\begin{cases} x^2 - y^2 = 9 \\ x^2 + 9y^2 = 169 \end{cases}$$

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

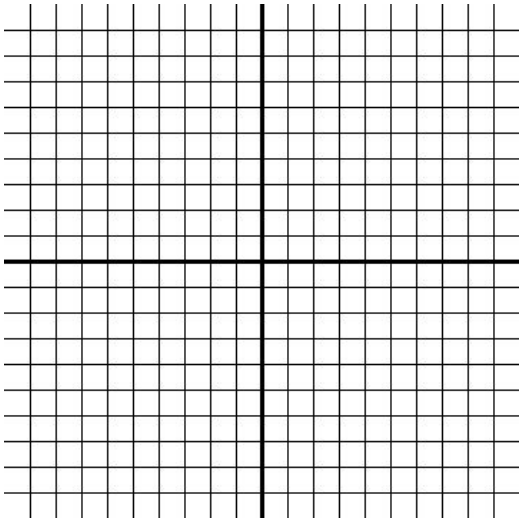
17. $(x+2)^2 = 4y$



18. $9(x-2)^2 + 16y^2 = 144$



19. $y^2 - 12x + 60 = 0$



20. $3x^2 - 12x - 2y^2 - 8y = 8$