Algebra II Chapter 10 (Conic Sections) Review – NON-CALCULATOR!!!

Please show all work and answers on separate paper. This test will be completely NON-CALCULATOR, so prepare appropriately. The test will contain 25 total questions. Test reviews are due on test day - NO LATE REVIEWS ACCEPTED.

- 1. Write an equation for a graph that is the set of all points in the plane that are equidistant from the point F(-7, 0) and the line x = 7.
- 2. Write an equation for a graph that is the set of all points in the plane that are equidistant from the point F(-3, 0) and the line x = 3.
- 3. Write an equation of a parabola with a vertex at the origin and a focus at (-2, 0).
- 4. Write an equation of a parabola with a vertex at the origin and a focus at (0, -7).
- 5. Write an equation of a parabola with a vertex at the origin and a directrix at y = 5.
- 6. Write an equation of a parabola with a vertex at the origin and a directrix at y = -7.
- 7. Identify the focus and the directrix of the graph of $y = -\frac{1}{12}x^2$.
- 8. Identify the focus and the directrix of the graph of $x = \frac{1}{8}y^2$.
- 9. Identify the vertex, focus, and directrix of the graph of $y = \frac{1}{8}(x-2)^2 + 5$. Graph the parabola.
- 10. Identify the vertex, focus, and directrix of the graph of $y = \frac{1}{20}(x-5)^2 + 2$. Graph the parabola.
- 11. Write an equation of a circle with center (-5, -8) and radius 2.
- 12. Write an equation of a circle with center (-8, -2) and radius 5.
- 13. Write an equation for the translation of $x^2 + y^2 = 25$, 2 units right and 4 units down.
- 14. Write an equation for the translation of $x^2 + y^2 = 64$, 5 units left and 7 units up.
- 15. Find the center and radius of the circle with equation $(x + 5)^2 + (y + 3)^2 = 16$. Graph the circle.
- 16. Write an equation in standard form of an ellipse that has a vertex at (5, 0), a co-vertex at (0, -3), and is centered at the origin.
- 17. Write an equation in standard form of an ellipse that has a vertex at (2, 0), a co-vertex at (0, 4), and is centered at the origin.
- 18. Find the foci of the ellipse with the equation $\frac{x^2}{49} + \frac{y^2}{64} = 1$. <u>Graph the ellipse</u>.
- 19. Find the foci of the ellipse with the equation $\frac{x^2}{25} + \frac{y^2}{49} = 1$. <u>Graph the ellipse</u>.
- 20. Write an equation of an ellipse with center (-4, 4), vertical major axis of length 14, and minor axis of length 8.
- 21. Write an equation of an ellipse with center (-2, -5), vertical major axis of length 10, and minor axis of length 8.

- 22. Write an equation of a hyperbola with vertices (2, -3) and (-10, -3), and foci (6, -3) and (-14, -3).
- 23. Write an equation of a hyperbola with vertices (4, -4) and (-8, -4), and foci (8, -4) and (-12, -4).

Graph the conic sections.

24. Graph $4x^2 - 9y^2 = 36$.25. Graph $16y^2 - 9x^2 = 144$.26. Graph $16(x + 3)^2 - 4(y - 2)^2 = 64$.27. Graph $5(y - 2)^2 - 25(x + 4)^2 = 100$.

Write the equations in standard form (*this section involves a lot of <u>completing the square</u>*). Then identify the conic section. If it is a parabola, give the vertex. If it is a circle, give the center and radius. If it is an ellipse or a hyperbola, give the center and foci.

28. $4x^2 + 7y^2 + 32x - 56y + 148 = 0$ 30. $y^2 - 4x + 6y + 29 = 0$ 32. $8x^2 - 6y^2 + 48x - 24y + 0 = 0$ 34. $x^2 + y^2 + 8x - 4y = -11$ 36. Graph the following system of equations: $\begin{cases} y = x - 4 \\ x^2 + y^2 = 16 \end{cases}$ 29. $5x^2 + 15y^2 + 40x - 60y + 65 = 0$ 31. $y^2 - 4x - 10y + 13 = 0$ 33. $5x^2 - 5y^2 + 20x - 40y - 85 = 0$ 35. $x^2 + y^2 - 6x - 8y = 11$

Identify the system as a linear-quadratic or quadratic-quadratic system. Then name the solution(s). *[hint: the solutions will be the points of intersection]*

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37. Graph the following system of equations:

$$\begin{cases} y = -x + 6 \\ x^2 + y^2 = 36 \end{cases}$$

Identify the system as a linear-quadratic or quadratic-quadratic system. Then name the solution(s).

Graph for #36:



Blank Graphs for Chapter 10 Review





