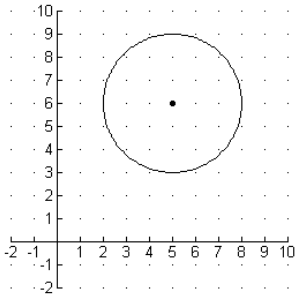
Math 2 Honors Name_____

Conics Review Period_____Score_____

1. Write the standard form of the equation of the circle.



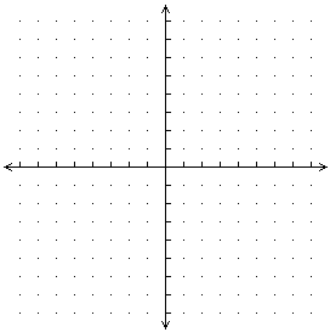
Find the center and radius of the circle.

2. $(x+3)^2 + y^2 = 100$

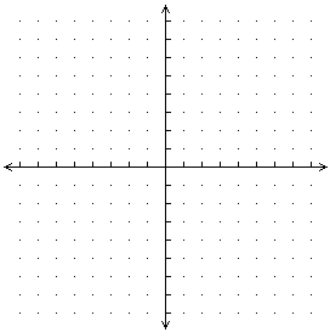
3. $x^2 + y^2 + 14x + 12y + 21 = 0$

Graph.

4. $(x-4)^2 + (y-1)^2 = 16$



5. $x^2 + y^2 - 2x - 8y - 8 = 0$



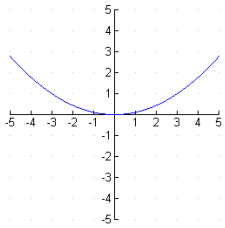
Write an equation for each translation.

6. $(x-3)^2 + (y-4)^2 = 4$; right 2 units, up 3 units, dilate by scale factor of 2

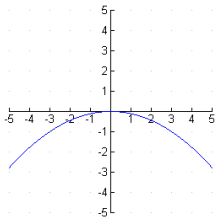
7. $(x-2)^2 + (y+7)^2 = 81$; left 2 units, down 4 units, dilate by scale factor of $\frac{1}{3}$

8. Match the equation $y^2 = -9x$ to its graph.

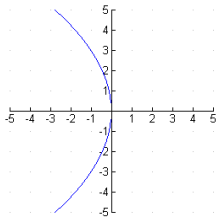
A.



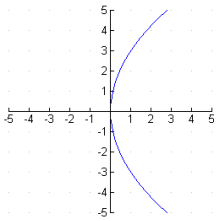
B.



C.

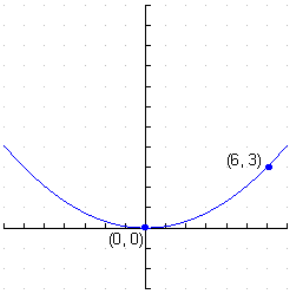


D.



Write the equation for the parabola.

9.



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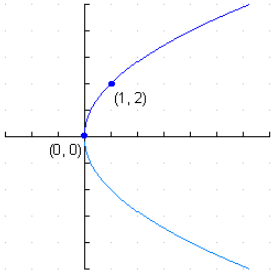


Find the equation of the parabola satisfying the given conditions.

11. focus at (2, 0); vertex at (0, 0)

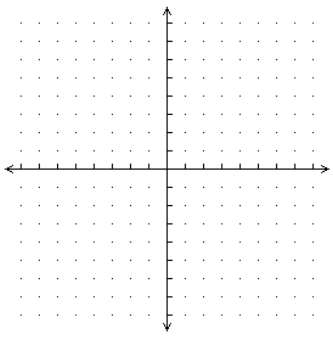
12. directrix the line $y = 3$; vertex at (0, 0)

13. focus at (0, 0); directrix the line $y = -4$

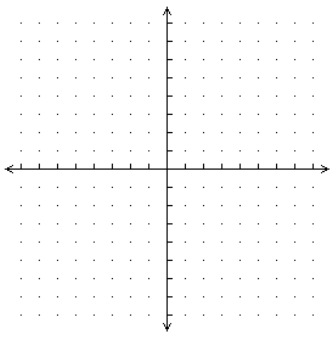
14. vertex at (3, 7); focus at (6, 7)

Find the vertex, focus, and directrix of the parabola. Graph the equation.

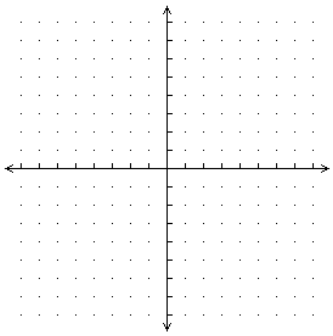
15. $x^2 = -8y$



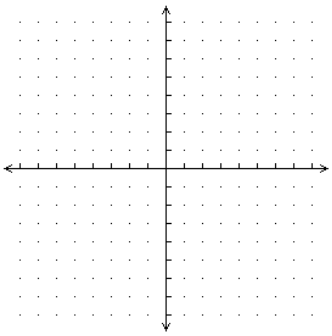
16. $y^2 = 12x$



17. $(y+3)^2 = 8(x+2)$

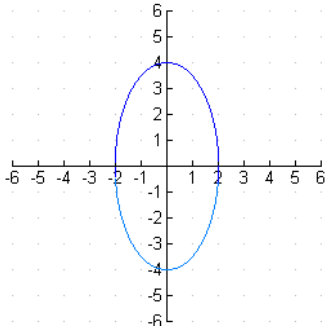


18. $(x+2)^2 = -(y-1)$



19. A reflecting telescope contains a mirror shaped like a paraboloid of revolution. If the mirror is 16 inches across at its opening and is 2 feet deep, where will the light be concentrated?

20. Match the graph to the equation.



A. $\frac{x^2}{16} + \frac{y^2}{4} = 1$

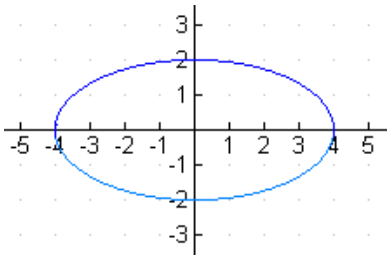
B. $\frac{x^2}{4} - \frac{y^2}{16} = 1$

C. $\frac{x^2}{4} + \frac{y^2}{16} = 1$

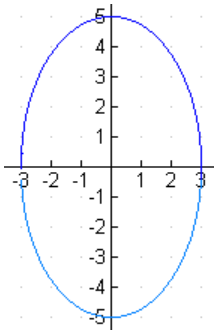
D. $\frac{y^2}{16} - \frac{x^2}{4} = 1$

Write the equation for the ellipse.

21.



22.



Find an equation for the ellipse satisfying the given conditions.

23. foci (-4, 0), (4, 0); vertices: (-8, 0), (8, 0)

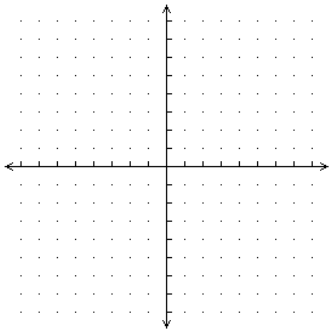
24. center: (0, 0); focus: (0, 3); vertex: (0, 5)

25. foci: (1, 6), (1, 0); length of major axis: 10

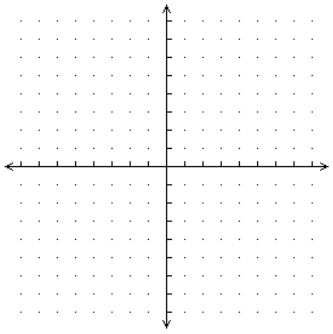
26. foci: (1, 4), (-5, 4); vertex: (-8, 4)

Find the center, foci, and vertices of the ellipse. Graph the ellipse.

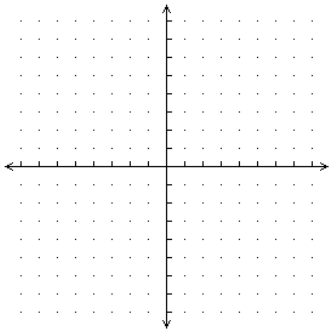
27. $\frac{x^2}{16}+\frac{y^2}{9}=1$



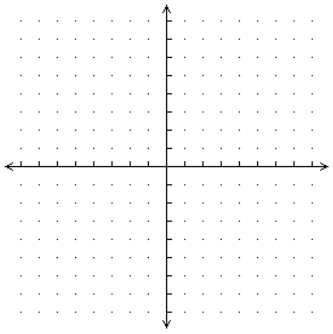
28. $4x^2+9y^2=36$



29. $\frac{(x-2)^2}{16}+\frac{(y+1)^2}{4}=1$

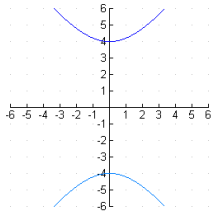


30. $9(x+1)^2+4(y-2)^2=144$

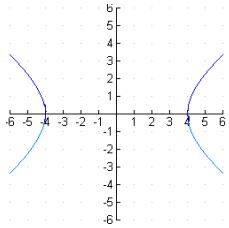


31. Match the equation $\frac{x^2}{9} - \frac{y^2}{16} = 1$ to its graph.

A.



B.



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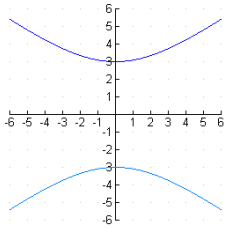
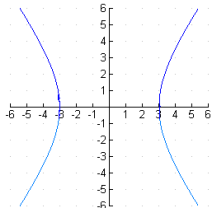


D.



Find the equation for the hyperbola satisfying the stated condition.

32. Vertices: $(\pm 3, 0)$; Foci: $(\pm 8, 0)$

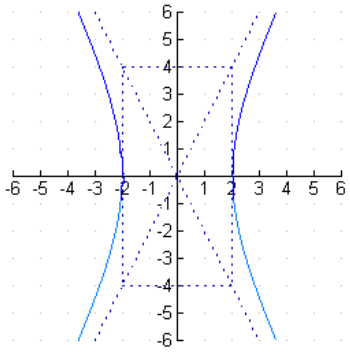
33. Center: (0, 0); Focus: $(0, \sqrt{65})$; Vertex: (0, 7)

34. Center: (5, 9); Focus: (-2, 9); Vertex: (4, 9)

35. Vertices: (2, -3) (2, 5); Focus: (2, 7)

Write an equation for the hyperbola.

36.



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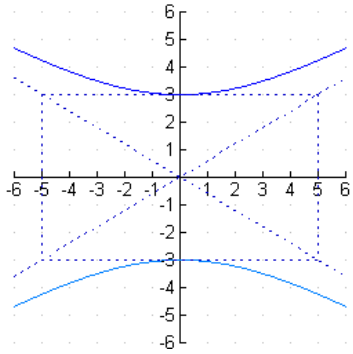
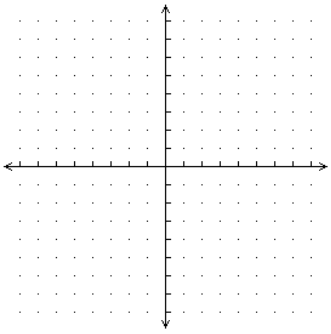
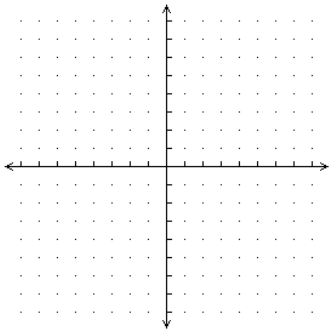


Find the center, vertices, and foci, and asymptotes of the hyperbola. Graph the hyperbola.

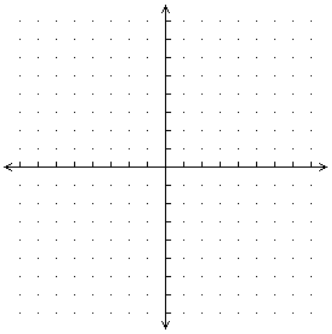
38. $\frac{x^2}{9}-\frac{y^2}{25}=1$



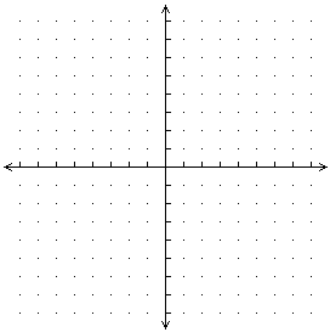
39. $36y^2-4x^2=144$



40. $\frac{(y-2)^2}{4}-\frac{(x+1)^2}{16}=1$



41. $(x-4)^2-4(y+1)^2=4$



Write each equation in standard conic form and identify it as a circle, parabola, ellipse, or hyperbola.

42. $4x^2+y^2+8x-4y+4=0$

43. $4x^2+9y^2-16x+18y=11$

44. $4x^2-16x+16y+32=0$

45. $2y^2-4y-x+2=0$

46. $y^2 - 4y - 4x^2 + 8x = 4$

47. $x^2 - y^2 - 2x - 2y = 1$

48. $x^2 + y^2 + 4x + 2y - 20 = 0$

49. $2x^2 + 2y^2 - 12x + 8y - 24 = 0$

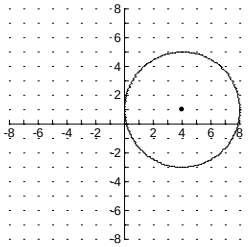
Conic Review Answers

1. $(x-5)^2+(y-6)^2=9$

2. $(h,k)=(-3,0);\ r=10$

3. $(h,k)=(-7,-6);\ r=8$

4.



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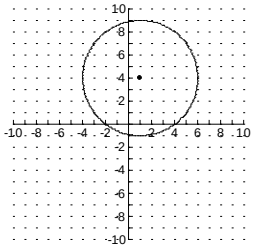


6. $(x-5)^2+(y-7)^2=16$

7. $x^2+(y+11)^2=9$

8. C

9. $x^2=12y$

10. $y^2=4x$

11. $y^2=8y$

12. $x^2=-12y$

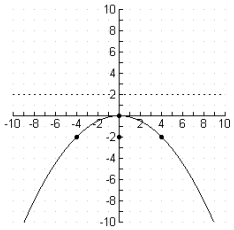
13. $x^2=8(y+2)$

14. $(y-7)^2=12(x-3)$

15. vertex: (0, 0)

focus: (0, -2)

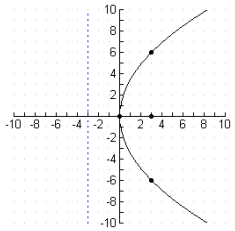
directrix: $y = 2$



16. vertex: (0, 0)

focus: (3, 0)

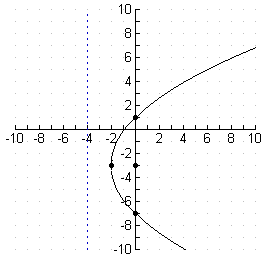
directrix: $x = -3$



17. vertex: (-2, -3)

focus: (0, -3)

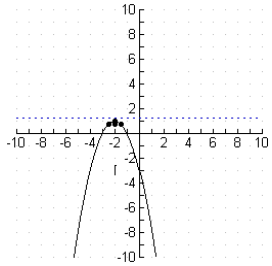
directrix: $x = -4$



18. vertex: (-2, 1)

focus: (-2, ¾)

directrix: $y = 1\ ¼$



19. 2/3 inches above the vertex

20. C

21. $\frac{x^2}{16}+\frac{y^2}{4}=1$

22. $\frac{x^2}{9}+\frac{y^2}{25}=1$

23. $\frac{x^2}{64}+\frac{y^2}{48}=1$

24. $\frac{x^2}{16}+\frac{y^2}{25}=1$

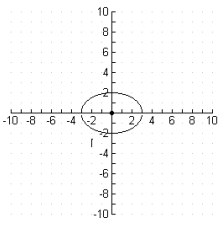
25. $\frac{(x-1)^2}{16}+\frac{(y-3)^2}{25}=1$

26. $\frac{(x+2)^2}{36}+\frac{(y-4)^2}{27}=1$

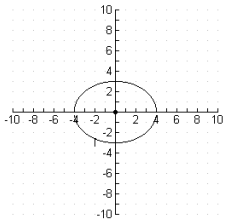
27. center: $(0,0)$

vertices: $(\pm 4, 0)$

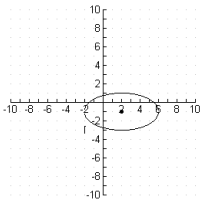
foci: $(\pm\sqrt{7}, 0)$



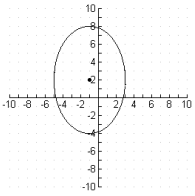
28. center: $(0, 0)$
vertices: $(\pm 3, 0)$
foci: $\left(\pm\sqrt{5}, 0\right)$



29. center: $(2, -1)$
vertices: $(-2, -1), (6, -1)$
Foci: $\left(2 \pm 2\sqrt{3}, -1\right)$



30. center: $(-1, 2)$
vertices: $(-1, 8), (-1, -4)$
foci: $\left(-1, 2 \pm 2\sqrt{5}\right)$



31. D

32. $\dfrac{x^2}{9} - \dfrac{y^2}{55} = 1$

33. $\dfrac{y^2}{49} - \dfrac{x^2}{16} = 1$

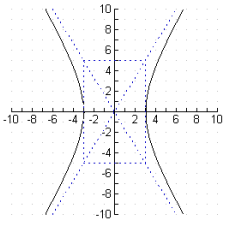
34. $\dfrac{(x-5)^2}{1} - \dfrac{(y-9)^2}{48} = 1$

35. $\dfrac{(y-1)^2}{16} - \dfrac{(x-2)^2}{20} = 1$

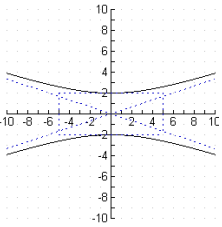
36. $\dfrac{x^2}{4} - \dfrac{y^2}{16} = 1$

37. $\dfrac{y^2}{9} - \dfrac{x^2}{25} = 1$

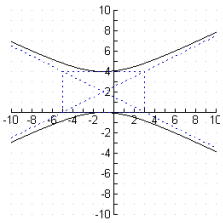
38. center: $(0, 0)$
vertices: $(-3, 0), (3, 0)$
foci: $\left(\pm\sqrt{34}, 0\right)$
asym: $y = \pm\dfrac{5}{3}x$



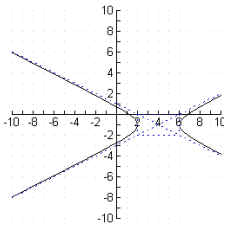
39. center: $(0, 0)$
vertices: $(0, 2), (0, -2)$
foci: $\left(0, \pm 2\sqrt{10}\right)$
asym: $y = \pm\dfrac{1}{3}x$



40. center: $(-1, 2)$
vertices: $(-1, 0), (-1, 4)$
foci: $\left(-1, 2 \pm 2\sqrt{5}\right)$
asym: $y - 2 = \pm\dfrac{1}{2}(x+1)$



41. center: $(4, -1)$
vertices: $(2, -1), (6, -1)$
foci: $\left(4 \pm \sqrt{5}, -1\right)$
asym: $y + 1 = \dfrac{1}{2}(x-4)$



42. $(x+1)^2 + \dfrac{(y-2)^2}{4} = 1$; ellipse

43. $\dfrac{(x-2)^2}{9} + \dfrac{(y+1)^2}{4} = 1$; ellipse

44. $(x-2)^2 = -4(y+1)$; parabola

45. $(y-1)^2 = \dfrac{1}{2}x$; parabola

46. $\dfrac{(y-2)^2}{4} - (x-1)^2 = 1$; hyperbola

47. $(x-1)^2 - (y-1)^2 = 1$; hyperbola

48. $(x+2)^2 + (y+1)^2 = 25$; circle

49. $(x-3)^2 + (y+2)^2 = 25$; circle