

Conic sections: Recap

Department of Mathematics.

Name: _____

1 Exercises

1.1 Conic sections

1. With help of the pythagorean theorem find the function of a circle with origin at $O = (-3/2, -1)$ and the point $(3/2, 3/2)$.
2. Write the equation of the circle with center at $(2, 4)$ and radius 3.
3. Find the origin, radius of the following circle equation $x^2 - 4x + y^2 - 5y + 2 = 0$, then write the factored equation.
4. Find the vertex, focus and directrix of the parabola $-x^2 + 3x - y + 5 = 0$.
5. find the equation of the parabola with vertex $(4, 3)$ and directrix $x = 5$
6. Find the intersection points (2 points) of between these two parabolas, $x^2 = 4(2/3)y$ and $y^2 = 4(2/3)x$.
7. Construct the hyperbola equation from it's asymptotes, $y = \pm 2(x + 2) - 6$.
8. Find the center, vertices, foci and asymptotes of the following hyperbola $(x + 1)^2/16 - (y + 3)^2/2 = 1$.
9. Find the center, vertices and foci of the following ellipse

$$\frac{(x+1)^2}{9} + \frac{(y-5)^2}{25} = 1$$

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10. Write the compacted equation of the ellipse $8x^2 - 24x + 3y^2 + 4y + 7 = 0$.