

Southern Leyte State University - Main Campus
College of Engineering

Math 100 (Pre-Calculus)

Module Four
ANALYTIC GEOMETRY PART 2

C02. Demonstrate knowledge on how to solve the worded problem of Conic section and different types of curve.

ILO5. Identify the different conic sections.

ILO6. Solve and perform the equation of a circle

ILO7. Solve and perform the equation of a parabola, ellipse, & hyperbolas



Enabling Learning Outcomes:

1. Calculate the parameter of a circle.
2. Solve and perform the different conics sections.

Overview

In this module, you will be able to enhance your problem solving skills. You will be illustrating, creating and solving the part one of analytic geometry.

Access the self-paced learning material entitled “**SPLM #4 Analytic geometry Part 2**” together with this module and also uploaded on the Google classroom: **Math 100**



Task #1 Calculate the parameter of a circle

Direction: Solve the following problems. Write your solutions on an A4 size bond paper. Emphasize your final answer by writing it inside a box.

1. A circle has a diameter whose ends are at $(-3,2)$ and $(12,-6)$. Determine the equation.
2. The center of a circle $x^2 + y^2 - 18x + 10y + 25 = 0$ is ___?
3. If $(3,-2)$ lies on the circle with center at $(-1,1)$ then the equation of the circle is ___.
4. A circle has an equation $x^2 + y^2 + 6x - 12y + 9 = 0$. Find the length of the chord 3 unit length from its center.
5. Find the center of the circle having an equation of $x^2 + y^2 + 14x - 8y + 56 = 0$.



Task #2 Solve and perform the different conics sections.

Direction: Solve the following problems. Write your solutions on an A4 size bond paper. bond paper. Emphasize your final answer by writing it inside a box.

1. The parabola has focus $(2,-2)$ and directrix $y = -5$. The vertex of the parabola is ____.
a. $(7/2, -2)$ b. $(2, 7/2)$ c. $(8, -7/2)$ d. $(2, -3/2)$

2. Find the equation of the parabola whose vertex is the origin and whose directrix is the line $x = 4$.

a. $y^2 = -16x$
b. $x^2 = 16y$

c. $y^2 = 16x$
d. $x^2 = -16y$

3. How far is the directrix of the parabola $(x-4)^2 = -8(y-2)$ from the x-axis?

- a. 2 b. 3 c. 4 d. 1

4. Find the equation of an ellipse with center at (2,0), focus at (5,0) and the length of the semi-minor axis is 4.

a. $16x^2 + 25y^2 - 64x - 254 = 0$ c. $16x^2 + 25y^2 - 64x - 424 = 0$
b. $16x^2 + 25y^2 - 64x - 306 = 0$ d. $16x^2 + 25y^2 - 64x - 336 = 0$

5. Determine the center of the ellipse $4x^2 + y^2 - 16x - 6y - 43 = 0$

- a. (2,4) c. (2,3)
b. (2,1) d. (2,2)

6. The eccentricity of the ellipse whose latus rectum is equal to half of its minor axis is ____.

- a. (sq. rt. of 3)/2 b. 1/4 c. (sq. rt. of 2)/3 d. $\frac{1}{2}$

7. The distance between the directrices of the ellipse $6x^2 + 2y^2 = 12$ is ____.

- a. 5 b. 6 c. 7 d. 8

8. Find the distance of the right directrix of the hyperbola from the origin $16x^2 - 9y^2 - 128x - 90y - 113 = 0$.

- a. 3.6 b. 5.8 c. 1.8 d. 4.4

9. Find the equation of hyperbola with center at (1,1), vertex (1,3) and eccentricity of 2.

a. $x^2 - 3y^2 - 2x + 6y + 12 = 0$ c. $x^2 - 3y^2 - 2x + 6y + 12 = 0$
b. $x^2 - 3y^2 - 2x + 6y + 10 = 0$ d. $x^2 - 3y^2 - 2x + 6y + 14 = 0$

10. The center of a hyperbola is the origin and its transverse axis is on the y-axis. One focus is at (0,6) and the eccentricity is equal to 2. Find the length of the latus rectum of the hyperbola.

- a. 18 b. 15 c. 16 d. 17

END!!!

Requirements on answering:

1. Write your solutions and answers on a **long bond paper**.
2. On the upper left of the bond paper, write your **full name** and **under it is your course**.
Ex. JUAN DE LA CRUZ, JR.
BSEE
3. On the upper center, write the **Module number and title**
Ex. Module #3 – Analytic Geometry Part 2
4. On the upper right, write the **date you have started** the exercises and affix your **signature right next to it**.
5. Bottom center, write the **page number** (applicable to two or more pages only)

Method on sending your answers

1. Take a **clear picture** of your output per page.
(For clearer results, use “CamScanner” app available on Google Play/App Store)
2. Rename your outputs with the following format: Surname_Task #_Page #

Ex. Telin_Task1_Page1
3. If you have many pages, please organize on sending your outputs.
(Page 2 should be sent after page 1)
4. Upload your outputs to Task Submission bins found in every module.
5. Deadline: **Oct. 13, 2021 (Wednesday) | 11:59 pm**

Annex A.

RUBRIC IN PROBLEM SOLVING

CATEGORY	4	3	2	1
Mathematical Concepts	Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).	Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).	Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).	Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.
Mathematical Reasoning	Uses complex and refined mathematical reasoning.	Uses effective mathematical reasoning	Some evidence of mathematical reasoning.	Little evidence of mathematical reasoning.
Mathematical Errors	90-100% of the steps and solutions have no mathematical errors.	Almost all (85-89%) of the steps and solutions have no mathematical errors.	Most (75-84%) of the steps and solutions have no mathematical errors.	More than 75% of the steps and solutions have mathematical errors.
Use of Manipulatives	Student always listens and follows directions and only uses manipulatives as instructed.	Student typically listens and follows directions and uses manipulatives as instructed most of the time.	Student sometimes listens and follows directions and uses manipulatives appropriately when reminded.	Student rarely listens and often "plays" with the manipulatives instead of using them as instructed.

Rating Scale:

4 **1.0 – 1.5**

3 **1.6 - 2.5**

2 **2.6 – 3.0**

1 **3.1 – 3.5** **Conditional**