

Southern Leyte State University - Main Campus
College of Engineering

Math 100 (Pre-Calculus)

Module Three
ANALYTIC GEOMETRY PART 1

C02. Demonstrate knowledge on solving the equation of a line, slope of a line.

ILO3. Perform the fundamental principles of geometry.

ILO4. Evaluate the equation of a line formulas



Enabling Learning Outcomes:

1. Illustrate and perform the fundamental principles of geometry.
2. Solve the equation of a line related problems.

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 #3 Analytic geometry Part 1**” together with this module and also uploaded on the Google classroom: **Math 100**



Task #1 Illustrate and perform the fundamental principles of geometry.

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

1. Find the coordinates of the midpoint of the sides of the triangle whose vertices are (1,1), (3,4), & (0,6).
2. The points A(-4,3) and B(2,7) determine a line segment. Find the coordinates of the midpoint of the segment.
3. Given the points A(1,0), B(5,3), C(2,7), and D(-2,4), show that the sides of the quadrilateral ACBD are equal.
4. If point (3,2) and (x,-5) lie on a line whose slope is $-\frac{7}{2}$, then what is the value of x?
5. A line passes through the points A(2,3) and B(-4,-1). If a point with abscissa 8 is on this line, find its ordinate.
6. Determine x so that the three-points (x,-3), (9,1) and (13,2) will line on a straight line.
7. The segment from (-1,4) to (2,-2) is extended three times its own length. The terminal point is ____?
8. What is the length of the line with slope $\frac{4}{3}$, from the point (6,7) down to the y-axis?



Task #2 Solve the equation of a line related problems.

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

- If point $P(m, 2m)$ is 5 units from the line $12x + 5y = 1$, m is equal to ____?
a. $43/11$ b. $-65/22$ c. 3 d. 5
- Determine the equation of the line passing through the origin with a slope of -2
a. $2x + y + 1 = 0$ c. $y = -2x$
b. $x = 2y$ d. $x + y - 2 = 0$
- The vertices of the triangle are $A(-1,1)$, $B(6,2)$ and $C(2,5)$. Find the equation of the median from A to BC.
a. $3y - 4x = 7$ c. $2x + 5y = 7$
b. $2y - x = 3$ d. $7y - x = 8$
- Find the equation of the line with slope of 2 and is passing through the point of intersection of the lines $3x - y = 5$, $x + 3y = 5$.
a. $-7x + 14y = 5$ c. $4x - 9y = 27$
b. $3x - 7y = 15$ d. $14x - 7y = 20$
- The equation of the line perpendicular to $3y + 2x = 5$ and passing through $(-2,5)$ is ____.
a. $5x = -2y$ c. $2y = 3x + 16$
b. $2y = 3x$ d. $3x = 12y + 8$
- For what value of k is the line $6y + (2k-1)x = 12$ perpendicular to the line $3y - 2x = 6$?
a. 5 b. 3 c. 4 d. 2
- A line has an equation of $3x - ky = 8$. Find the value of k if this line makes an angle of 45° with the line $2x + 5y = 17$.
a. 5 b. 4 c. 6 d. 7
- What is the slope of the line that passes through $(4,3)$ and is perpendicular to the line that passes through $(-3,4)$ and $(3,-4)$.
a. $-4/3$ b. $3/4$ c. $-3/4$ d. $4/3$
- The distance between line 1 and line 2 is 4 units, line 1 is given by the equation $4x - 3y = 12$. What is the equation of line 2?
a. $8x - 6y = -12$ c. $4x - 3y = -8$
b. $8x - 6y = 12$ d. $4x - 3y = 8$
- Find the distance between the lines, $3x + y - 12 = 0$ and $3x + y - 4 = 0$
a. $16/\sqrt{10}$ b. $12/\sqrt{10}$ c. $4/\sqrt{10}$ d. $8/\sqrt{10}$

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 1
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. 6, 2021 | 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**