SCHOOL OF ADVANCED COMPUTING & INFORMATION TECHNOLOGY

Department of Computer Science,
Gujarat University

M.SC. SEMESTER - I (AI & ML)

MSCAI111 MATHEMATICAL FOUNDATION

ASSIGNMENT- II

PREPARED BY

Dr SIDDHANT TRIVEDI

UNIT-2

Co-ordinate Geometry

Question 1. Derive the Distance formula for two points in Cartesian plane.

Question 2. Prove that the points $A(4,\ 4), B(3,\ 5)$ and $C(-1,-1)$ are the vertices of a right angled triangle.

Question 3. If the distance between the points $A(5,x)$ and $B(2,6)$ is $3\sqrt{2}$, then find the value of x.

Question 4. Show that the vertices of a triangle $(7,\ 9), (3,-7)$ and $(-3,3)$ form a right angled isosceles triangle.

Question 5. Show that the points $(1,0), (5,3), (2,7)$ and $(-2,4)$ are the vertices of a rhombus.

Question 6. Show that $(-1,0), (2,3), (4,1)$ and $(1,-2)$ are the vertices of a rectangle.

Question 7. Find the point on Y-axis which is equidistant from the points $(-5,-2)$ and $(3,2)$.

Question 8. Find the area of the triangle whose vertices are $(4,4), (3,-2)$ and $(-3,16)$.

Question 9. For which value of x the area of the triangle formed by the vertices $(x,4), (8,2)$ and $(6,7)$ is 13 units?

Question 10. Find the co-ordinates of the point which divides the line segment joining the points $(6,3)$ and $(-4,5)$ in the ratio $3:2$ (i) internally and (ii) externally.

Question 11. Find the ratio in which $P(-1,-1)$ divides $\overline{AB}$, where $A(4,4), B(7,7)$.

Question 12. For $A(-2,3)$ and $B(3,0)$, find the ration in which Y-axis divides $\overline{AB}$ from A's side.

Question 13. Show that the points $(1,1), (2,3)$ and $(3,5)$ are collinear.

Question 14. Without using Pythagoras theorem, show that the points $A(4,4)$, $B(3,5)$ and $C(-1,-1)$ are the vertices of a right angled triangle.

Question 15. If the angle between two lines is $\frac{\pi}{4}$ and slope of one of the lines is $\frac{1}{2}$ find the slope of other line.

Question 16. Obtain the measure of an angle between the following pairs of lines

1) $x - y + 3 = 0, y - 2 = 0$
2) $x - y + 4 = 0, 5x - y + 3 = 0$
3) $x + y + 1 = 0, x - y = 0$

Question 17. Find the equation of the perpendicular bisector of the line segment joining the points $A(2, 3)$ and $B(6, -5)$.

Question 18. Find the equation of the line passing through the points $(2, 3)$ and $(5, -2)$.

Question 19. Find the equation of the line which passes through the point $(-5, 4)$ and is such that the portion intercepted between the axes is divided by the points in the ratio $1 : 2$.

Question 20. Find the equation of a line through the intersection $x - y - 1 = 0$ and $2x - 3y + 1 = 0$. Also

1) Having slope -2
2) Parallel to the line $x + y + 4 = 0$
3) Passes through $(1, 2)$