1. Co-ordinates can lie in X-axis and Y-axis, or any of the 4 quadrants.
2. Quadrant-I and Quadrant-III have parity, since former covers all (+, +) and latter all (-, -) pairs
3. Quadrant-II and Quadrant-IV have parity, since former covers all (-, +) and latter all (+, -) pairs
4. Distance between two points is



1. If a line AB is divided by the point P in the ratio m:n, the point P is given by the section formula

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1. Area of a triangle bounded by points A (x1, y1), B(x2, y2), C (x3, y3) in the anti-clockwise direction is given by



1. Area of a triangle should be equal to 0, if the 3 points are co-linear.
2. Change in y with respect to x is called slope/gradient. Horizontal line has slope of 0, while slope is undefined for a vertical line. It can be expressed in terms of angle also (tan*θ*)
3. Two non-vertical lines l1 and l2 are parallel if and only if their slopes are equal.
4. Two non-vertical lines l1 and l2 are perpendicular if and only if their slopes multiply to give -1. Thus m1 \* m2 = -1
5. Acute angle θ between two lines with slopes m1 and m2 is given by



where and are angles formed by the lines with X-axis.

1. Obtuse angle ϕ between two lines with slopes m1 and m2 is given by tan(ϕ)=(m1−m2)/(1+m1×m2) = -tan(θ)
2. If Lines l1 and l2 are perpendicular to each other with slopes m1 and m2 and with inclinations α and β respectively, β = 90 + α, and tanα = −cotβ. It also means, tanβ = −cotα
3. y = a represents the line parallel to X-axis and *a unit* from it.
4. x = a represents the line parallel to Y-axis and *a unit* from it.
5. Equation of a line in a **point-slope form** is



where m is 

1. Equation of a line in a **2-point form** is



1. Equation of a line in a **slope-intercept form** is y = mx + c, where c is the y-intercept.
2. Equation of a line in a **slope-intercept form** is y = m(x – d), where d is the x-intercept.
3. Equation of a line whose x-intercept is a and y-intercept is b is given as



This is called the **intercept form**