Assignment 1

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1 Assignment 1

Question 21 : Find the coordinates of the points which divide, internally and externally, the line joining the point (a+b, a-b) to the point (a-b, a+b) in the ratio a: b.

Solution :

Let us consider a line segment as AB. The coordinates of point A is given as (a+b, a-b) and coordinates of point B as (a-b, a+b).

Now considering another point say P, which divides the AB internally or externally.

We have to find out the coordinates of P point when it divides AB line internally and also externally.

Formula for Internal Division Section:

$$Px = \frac{a(a-b)+b(a+b)}{a+b} = \frac{(a^2+b^2)}{a+b}$$

$$Py = \frac{a(a+b)+b(a-b)}{a+b} = \frac{(a^2+2ab-b^2)}{a+b}$$

So, the coordinates of P will be : (Px, Py)

Formula for External Section:

$$Qx = \frac{a(a-b)-b(a+b)}{a-b} = \frac{(a^2-2ab-b^2)}{a-b}$$

$$Qy = \frac{a(a+b)-b(a-b)}{a-b} = \frac{(a^2+b^2)}{a-b}$$

So, the coordinates of P will be : (Qx, Qy)

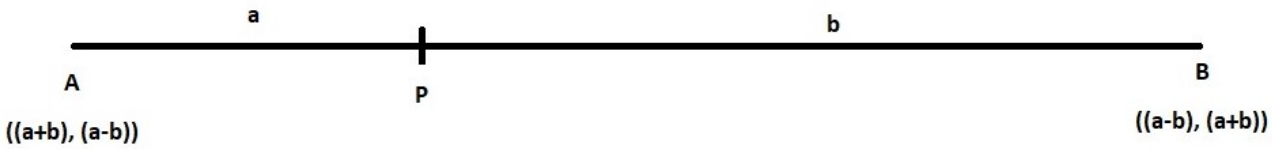

Figure 1: Internal Section

Figure 2: External Section