Download all python codes from

https://github.com/Anjalibagade/Assignment1/tree/master/Codes

and latex codes from

https://github.com/Anjalibagade/Assignment1

Assignment1

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1 Problem

Find the coordinates of the point which divides, internally and externally, the line joining (-3,-4) to (-8,7) in the ratio 7:5

Explanation:
The coordinates of point when (x_1,y_1) and (x_2,y_2) are divided in $m:n$
(i)Formula to find internally divided coordinate is $(\frac{mx_1+nx_2}{m+n}, \frac{my_1+ny_2}{m+n})$
(ii)Formula to find externally divided coordinate is $(\frac{mx_1-nx_2}{m-n}, \frac{my_1-ny_2}{m-n})$
let the point be $S(a,b)$
Internal division is taking place at point $S(a,b)$
Substitute all the values in the equation given below $S(a,b)=(\frac{mx_2+nx_1}{m+n}, \frac{my_2+ny_1}{m+n})$
$a=(\frac{7(-8)+5(-3)}{7+5})=(\frac{-56-15}{12})$
$a=(\frac{-71}{12})$
$b=(\frac{7(7)+5(-4)}{7+5})=(\frac{49-20}{12})$
$b=(\frac{29}{12})$
Hence internal division is taking place at point $S(a,b)=S(\frac{-71}{12}, \frac{29}{12})$
Similarly, Finding external division point T
Let the point be $T(p,q)$
Substitute all the values in the equation given below
$T(p,q)=(\frac{mx_2-nx_1}{m-n}, \frac{my_2-ny_1}{m-n})$
$p=(\frac{7(-8)-5(-3)}{7-5})=(\frac{-56+15}{2})$
$p=(\frac{-41}{2})$
$q=(\frac{7(7)-5(-4)}{7-5})=(\frac{49+20}{2})$
$q=(\frac{69}{2})$
Hence external division is taking place at point $T(p,q)=T(\frac{-41}{2}, \frac{69}{2})$

2 Result

Plot of coordinate of the points obtained from Python code is shown below.

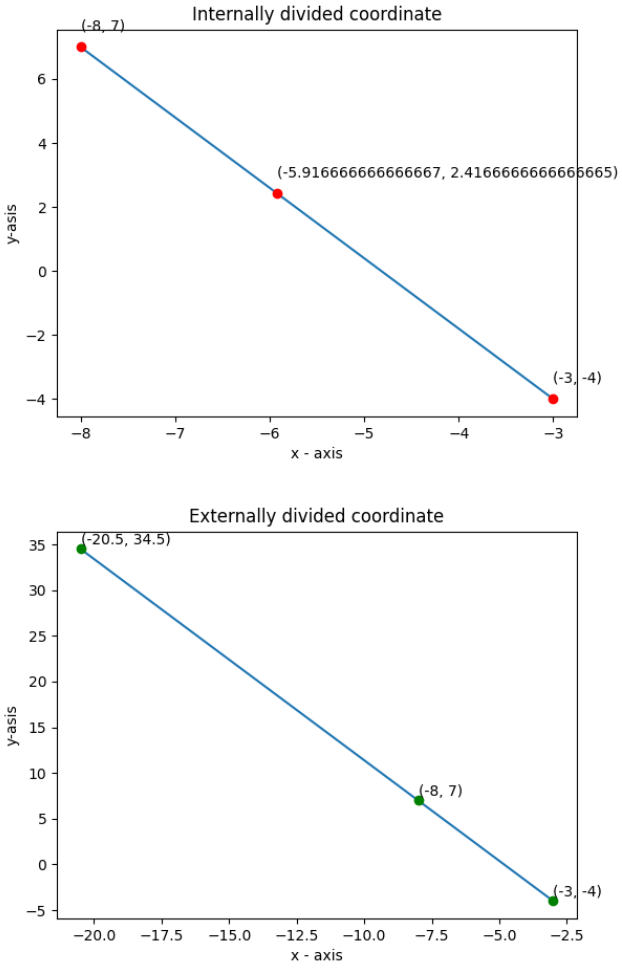

Fig. 0: Plot of coordinate of the point which divides internally and externally