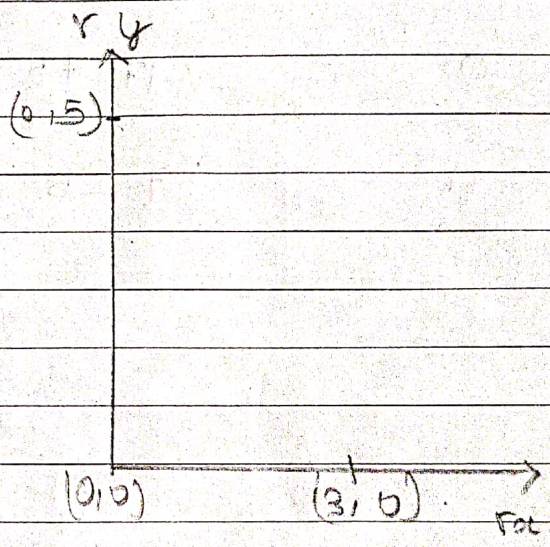
D Y PATIL
RAMRAO ADIK INSTITUTE OF TECHNOLOGY
NAVI MUMBAI

KARTIK KHANNA | SE | A3 | 18CE1044.

1. Plot the points using midpoint ellipse with $r_x = 3$ and $r_y = 5$. for region 1.

→ MIDPOINT ELLIPSE FOR REGION I ONLY.

$r_x = 3 \qquad r_y = 5.$



$P_{0K} = r_y^2 + \frac{r_x^2}{4} - r_y \cdot r_x^2$

$P_{0K} = (5)^2 + \frac{(3)^2}{4} - 5(3)^2.$

$P_{0K} = -17.75.$

$\because P_{0K} < 0.$

* PLOT $(x_{k+1}, y_k) = (1, 5)$.

Now, $2r_y^2 x_{k+1} = 2 \times 5^2 \times 1 = 50.$

$2r_x^2 y_{k+1} = 2 \times 3^2 \times 5 = 90.$

$\because 2r_y^2 x_{k+1} < 2r_x^2 y_{k+1}$ So proceed.

$\because P_{0K} < 0.$

$P_{1K} = P_{0K} + 2r_y^2 x_{k+1} + r_y^2.$

$P_{1K} = -17.75 + 2(5)^2(1) + (5)^2.$

$P_{1K} = 57.25.$

$\because P_{1K} > 0.$

* Plot $(x_{k+1}, y_{k+1}) = (2,4)$.

Now

$2r_y^2 x_{k+1} = 2 \times (5)^2 \times 2 = 100$.

$2r_x^2 y_{k+1} = 2 \times (3)^2 \times 4 = 72$.

$\because$ $2r_y^2 x_{k+1} > 2r_x^2 y_{k+1}$ so stop since region I has been completed.

K	P_K	(x_{k+1}, y_{k+1})	$2r_y^2 x_{k+1}$	$2r_x^2 y_{k+1}$
0	-17.75	(1, 5).	50	90.
1	57.25	(2, 4).	100	72.