**MIDPOINT ELLIPSE ALGORITHM:**

1. **Input:** Provide the radii rx, ry, and the ellipse center (xc, yc). Initialize the first point on the ellipse centered on the origin as:

(x0 ,y0) = (0, ry)

1. **Region 1 Decision parameter:** Calculate the initial decision parameter for region 1 as:

P1 = r2y - r2x ry + r2x

1. **Iteration in Region 1:**for each x-position in Region 1(starting at k=0),perform the following:

* If P1 < 0,the next point is (xk + 1,yk ) and update:

P1 = P1 + 2r2yxk + r2y

* Otherwise, the next point is(xk + 1,yk -1) and update:

P1 = P1 + 2r2yxk - 2r2xyk + r2y

* Continue until 2r2yx = 2r2xy.

1. **Region 2 Decision Parameter :**Using the last point(xp, yp) from Region 1,calculate the initial decision parameter for Region 2:

P2 = r2y (xp + +)2 + r2x(yp  - 1)2 - r2x r2y

1. **Iteration in Region 2:**For each y-position in Region 2(starting at k=0),perform the following:

* If P2 > 0, the next point is (xk , yk -1) and update:

P2 = P2 - 2r2xxk + r2x

* Otherwise the next point is (xk + 1,yk -1) and update:

P2 = P2 +2r2yxk - 2r2xyk +r2x

1. **Symmetry Points:** For each calculated pixel position (x, y), determine the symmetric points in the other three quadrants.
2. **Translation:** Translate each pixel position to the ellipse centered at (xc, yc): (x’, y’) = (x + xc , y + yc)
3. **Plot:** Plot the points for both regions until the stopping condition 2r2yx = 2r2xy is satisfied.