Angle is the angle between semi-major axis and tangent line to a point identified by angle from semi-major axis and is thus same in two figures. One can show in second figure that

The distance shown in first figure can be figured out by second figure as:

where is the Elliptic Integral of second kind (as per Mathematica’s convention).

The equation of rotated ellipse (rotated clockwise by ) and centered at is:

When the touching point is identified by angle as shown in first figure, the ellipse is rotated by . So one needs to rotate a non-rotated zero-centered ellipse by clockwise and need to shift the point identified by to location . This is the shift by which whole ellipse should be shifted. Since, center was initially at , this shift are the co-ordinates of the center of the rolling ellipse.

