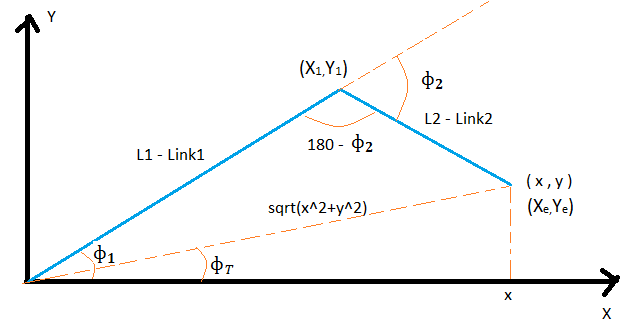
****

**Forward Kinematics of 4DOF Robot Arm:**

X1=L1sin ф1

Y1=L1cos ф1

Xe = Xend effector = L1 sin ф 1 + L2 sin (ф1+ф2)

Ye = Yend effector = L1 cos ф 1 + L2 cos (ф1+ф2)

Фe = Фend\_effector = ф1+ ф2+ ф3

**Inverse Kinematics of 4DOF Robot Arm:**

By law of cosines, (here L1 = and L2 = )

This implies,

Calculating the angle between both the links 1 and 2,

Considering the angle of M3 (base rotation),