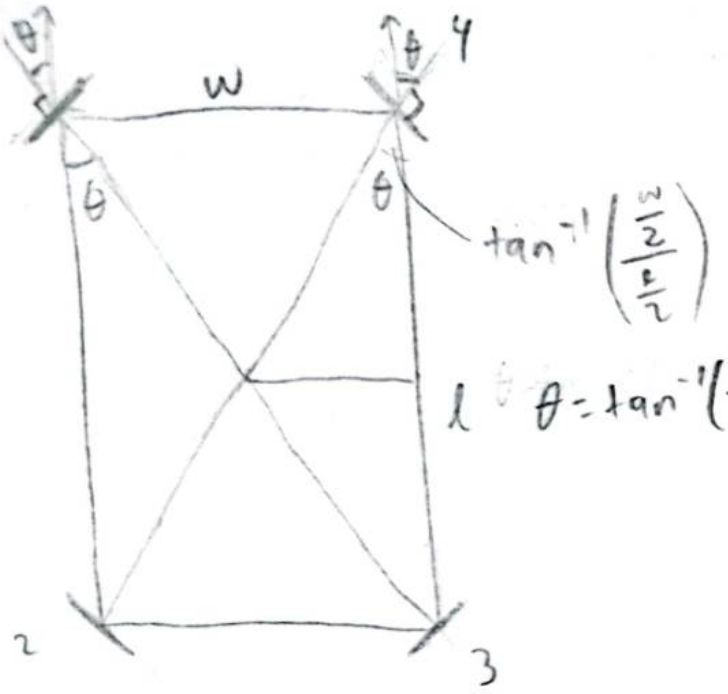


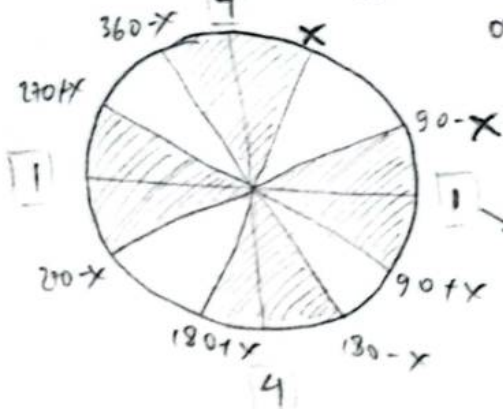

$\theta = \tan^{-1}\left(\frac{\frac{w}{2}}{\frac{l}{2}}\right)$

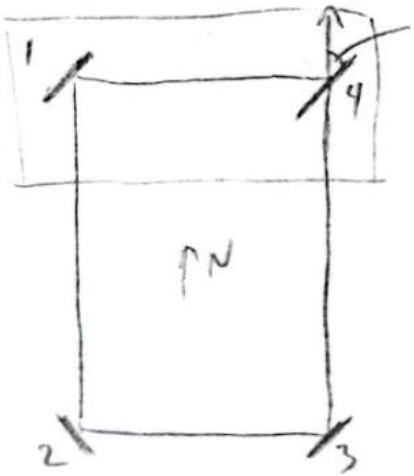
$l$ $\theta = \tan^{-1}\left(\frac{w}{l}\right)$

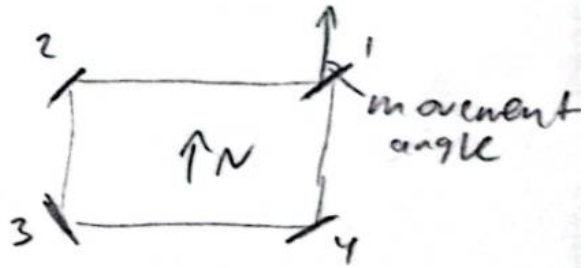
## rotate only

2,4 → rotate $90° - \theta$ CCW $= 270 + \theta$ CW

1,3 → rotate $90° - \theta$ CW



imu_deg = (imu_north / π) * 180

module1 angle = ((imu_deg ≥ (90-x) && imu_deg ≤ (90+x)) || (imu_deg ≥ (270-x) && imu_deg ≤ (270+x))) ?
move_angle : 90 - θ

module2 angle = 270 + θ

module3 angle = 90 - θ

module4 angle = ((imu_deg ≥ x && imu_deg < (180-x)) || (imu_deg > (180+x) && imu_deg < (360-x))) ?
270 + θ : move_angle

required parameters: chassis length, width, x (some imu angle to change module 1 and 4 angle), movement angle, movement speed

module1 speed = (imu_deg ≥ (90-x) && imu_deg ≤ (90+x)) ? move_speed :
((imu_deg ≥ (270-x) && imu_deg ≤ (270+x)) ? -move_speed : rotate_speed)

module2 speed = rotate_speed

module3 speed = rotate_speed

module4 speed = (imu_deg ≤ x || imu_deg ≥ 360-x) ? move_speed :
((imu_deg ≥ (180-x) && imu_deg ≤ (180+x)) ? -move_speed : rotate speed)