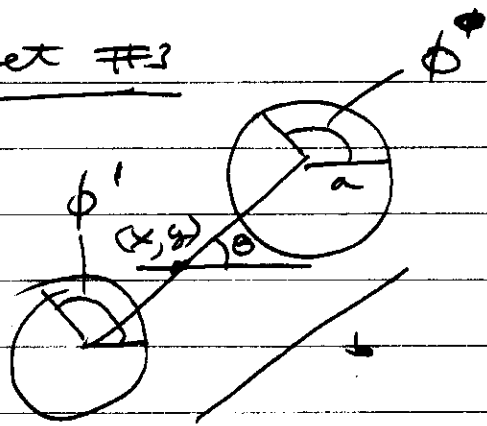
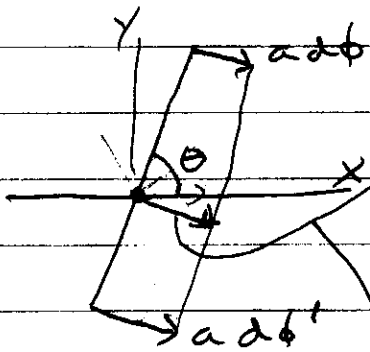


Solutions of homework set #3

1) simplest case:  $\theta = \frac{\pi}{2}$   
 Then  $dx = \frac{a}{2}(d\phi + d\phi')$



assume that one wheel moves by  $d\phi$  and the other by  $d\phi'$ , then  $(x, y) \rightarrow (x+dx, y+dy)$



projections of  $dx$  and  $dy$  on this vector

$$dx \sin \theta - dy \cos \theta = \frac{a}{2}(d\phi + d\phi')$$

no motion  $\perp$  this vector

$$dx \cos \theta + dy \sin \theta = 0$$

a third constraint is

$$b d\theta = a d\phi - a d\phi'$$

but this one can be integrated.

$$b \theta = a(\phi - \phi') + \text{constant}$$