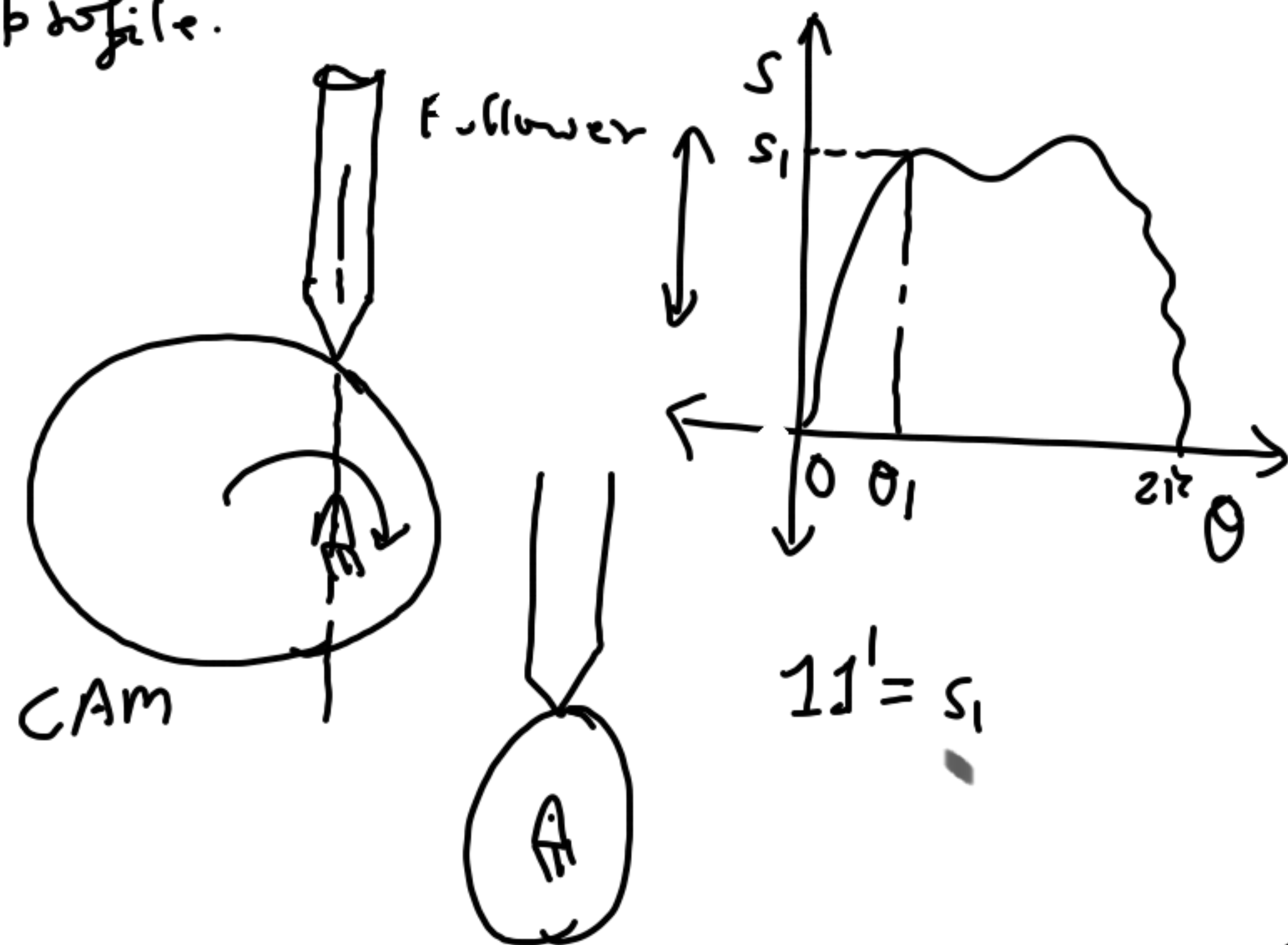


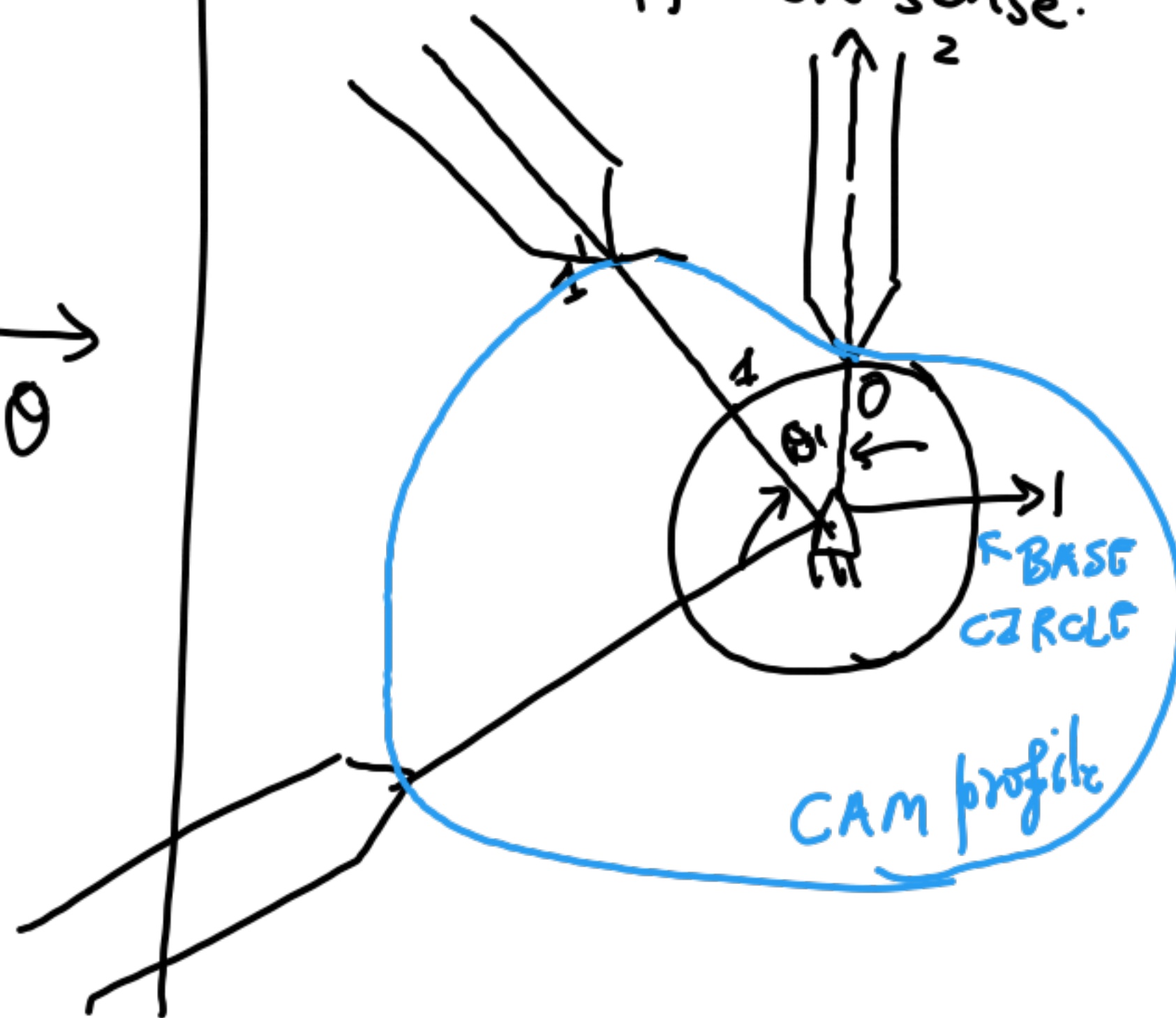
CAM SYNTHESIS

Given "motion" of follower,
we want to deduce CAM
profile.



We use principle
of inversion.

We fix CAM
and translate as well
as rotate follower
in the opposite sense.



CAM size
scales
with base
circle radius
we need
CAM profile
to be convex.
So base circle
shouldn't
be too small
also

Follower # 2

Roller follower

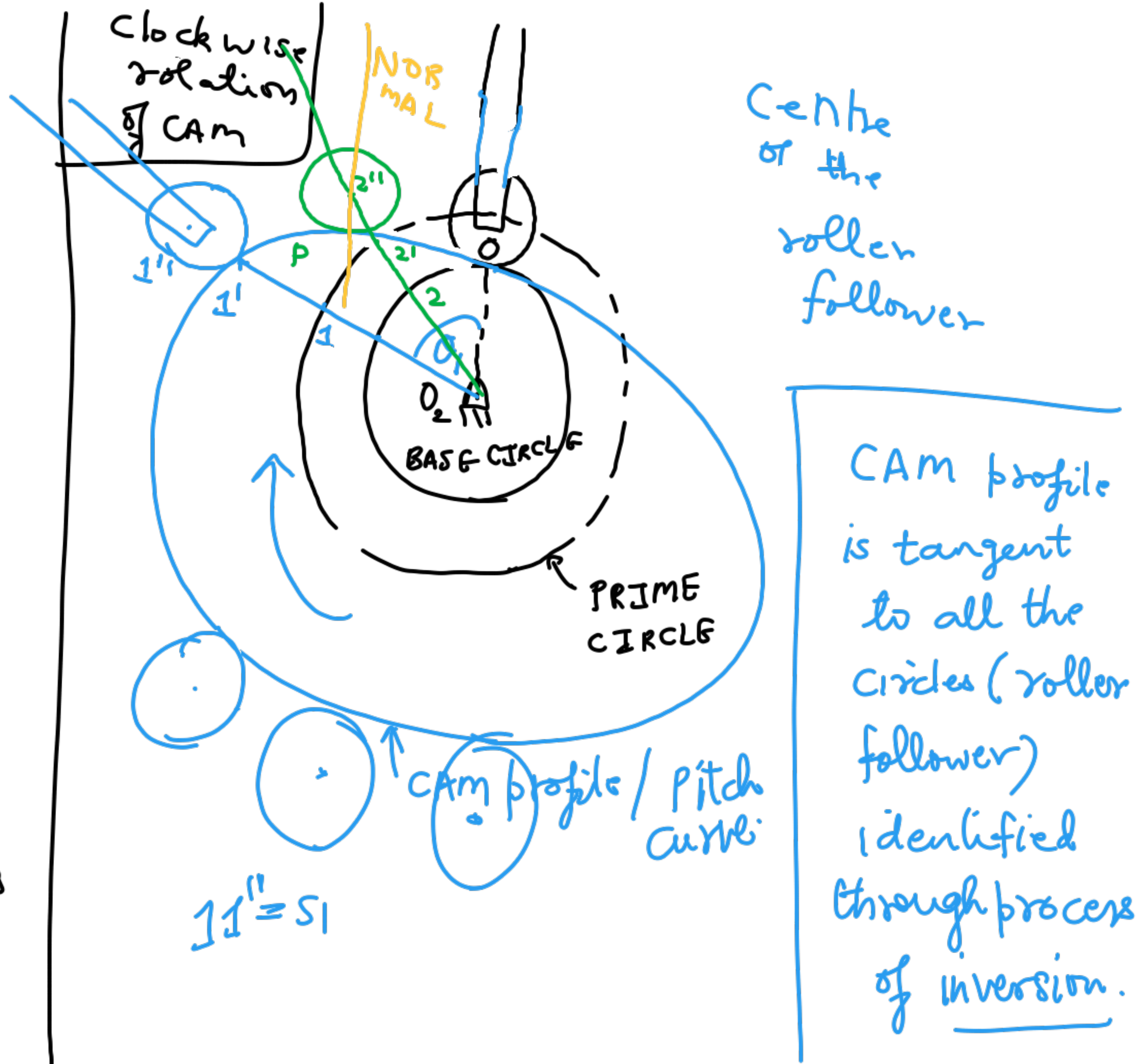
Translating
and radial



Given: Displacement
profile of roller follower

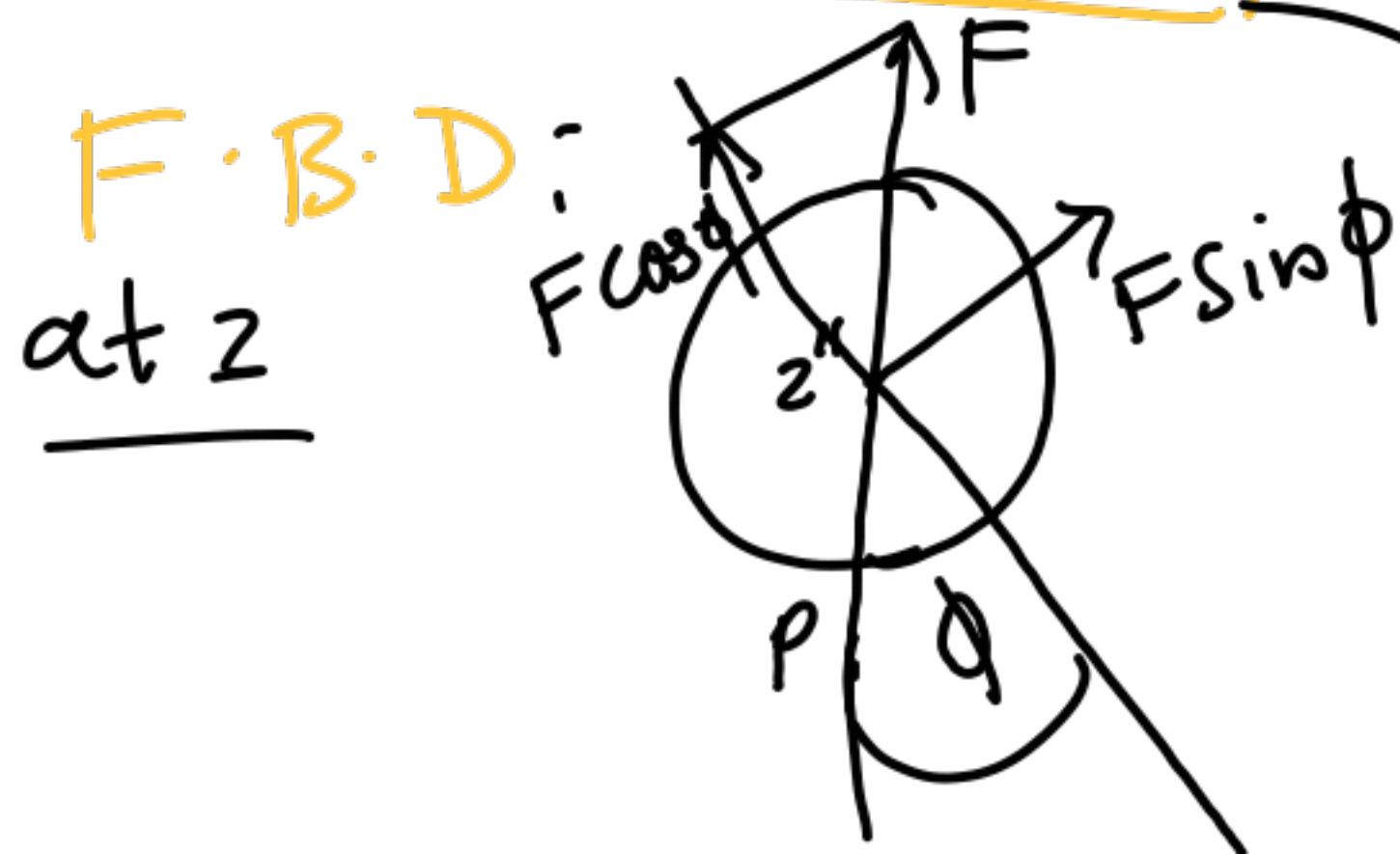
To find: CAM surface;

We have to assume values
for radius of roller and
base circle.



Theory of envelopes.

So we want to find a curve which envelopes a family of given circles.



In general, the common normal at the point of contact, need not coincide with the follower axis.

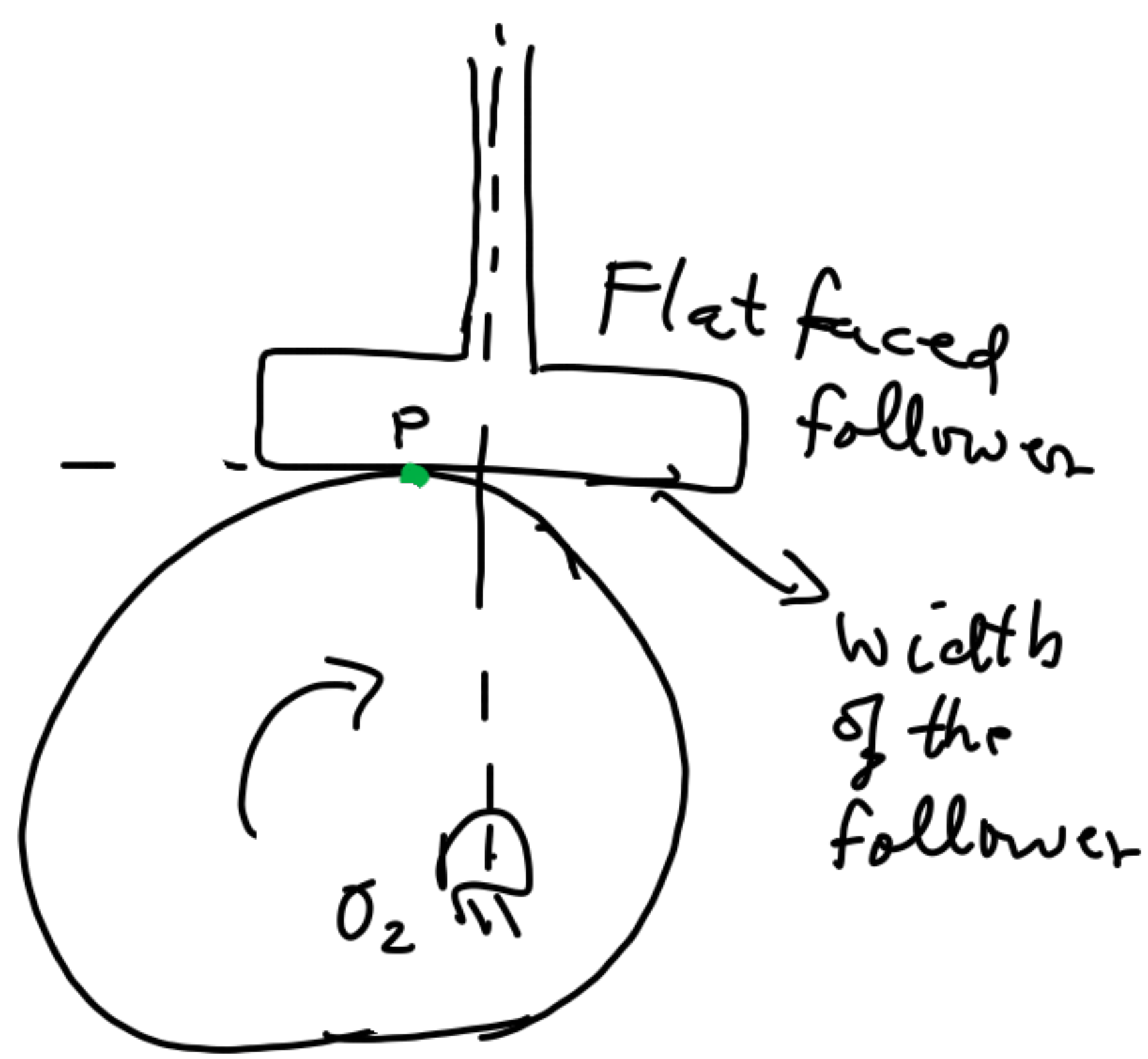
The corresponding angle is called "pressure angle".

Recommended $\phi < 20^\circ$ to 30° angle

Increasing the base circle radius, will bring down the pressure angle.

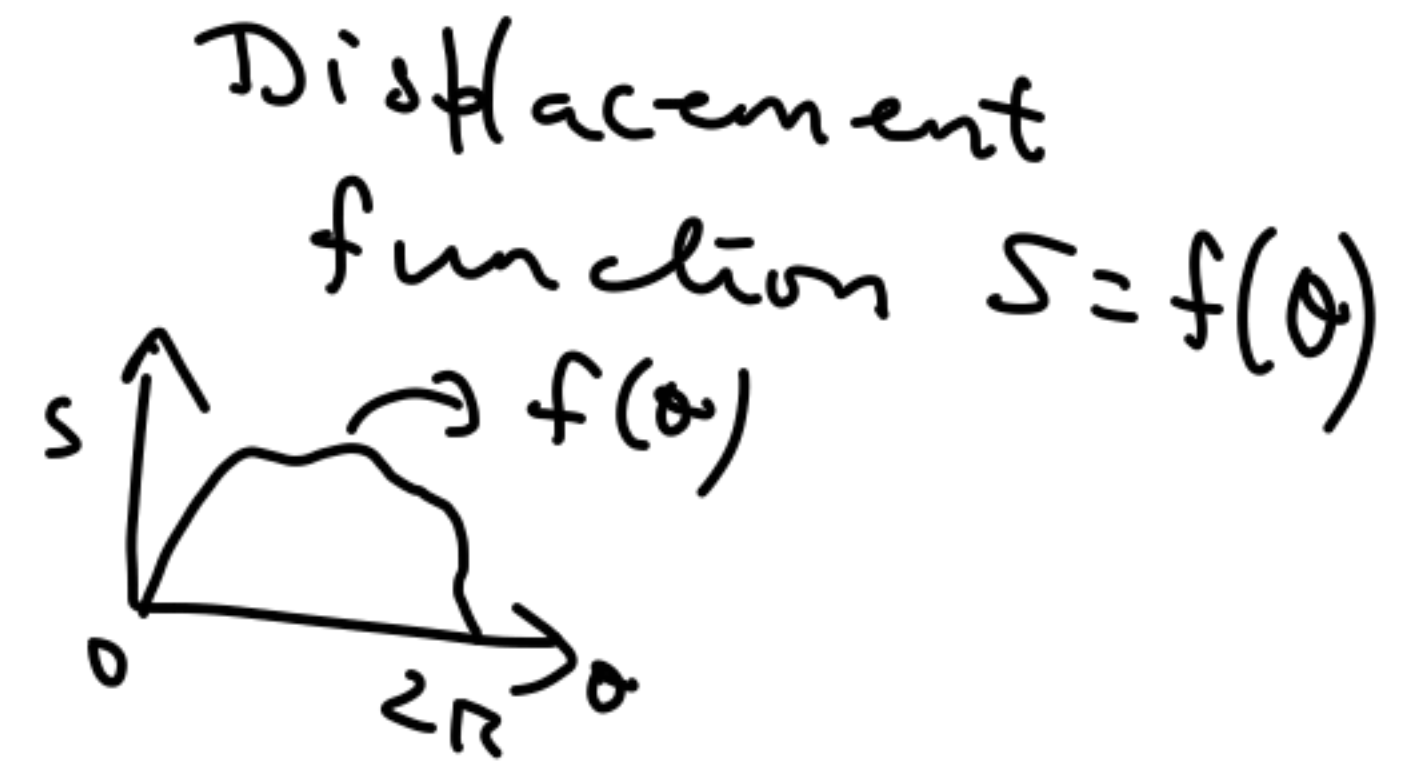
Analytical approach

Translating flat-faced follower



The flat line of the follower is the common tangent at the point of contact.

The contact point P changes with the angle through which CAM rotates



From fixed point O_2 , the radial distance of follower is

$$R(\theta) = r_b + f(\theta)$$

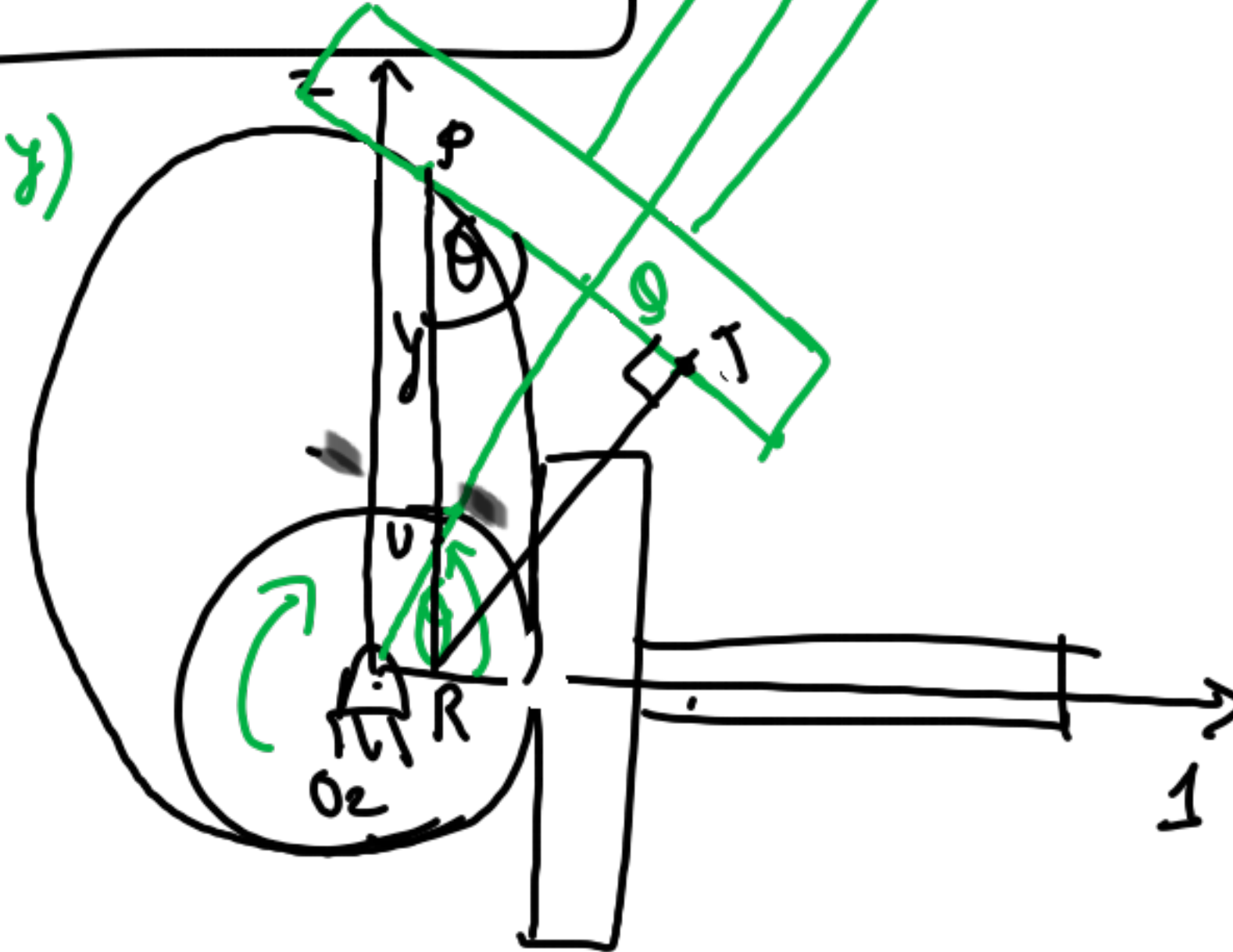
↓
Base circle radius

$$O_2 Q = R(\theta)$$

$$P = (x, y)$$

$$O_2 Q = R$$

$$PQ = t$$



$$\begin{array}{l} P Q = t \\ P R = y \end{array}$$

$$PR = y$$

$$\theta_2 R = x$$

In ΔPRT