

**Q1.**

$$\frac{360^\circ}{100} = 3.6^\circ$$

As we can observe from the figure, the ordering of rising edges generated on Ch A and Ch B respectively tells the direction of motion.

Concern 1: If the speed is getting very fast, the resolution limit may cause inaccuracy in the recording of voltage.

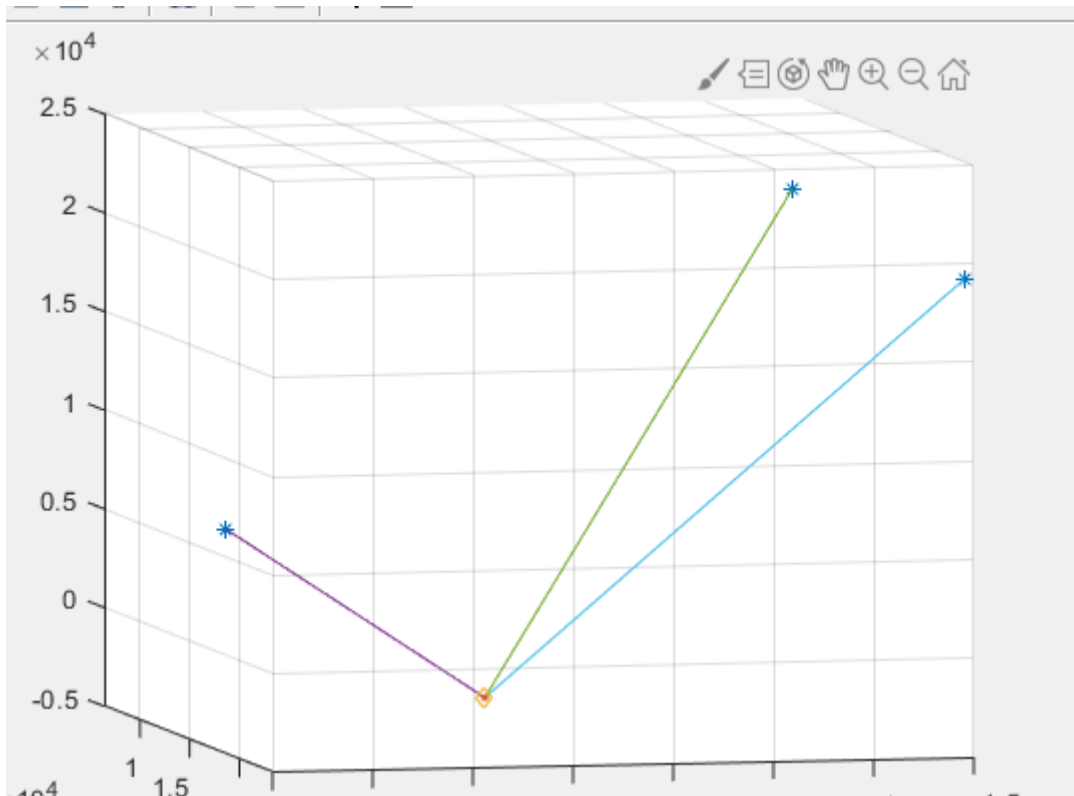
Concern 2: To increase resolution and record the direction, multiple wheels are needed which may cost more.

**Q2**

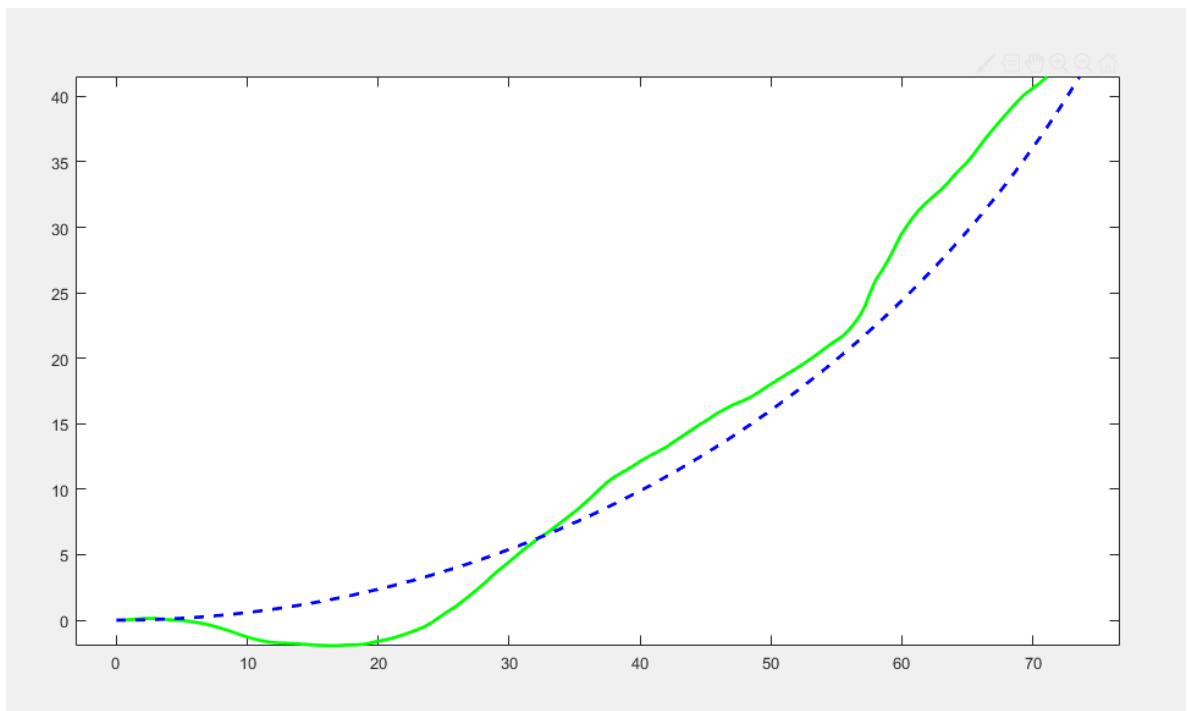
The simulation: just follow the formula to simulate an ideal situation.

When it comes to synchronized situation, we only need three satellites because we don't need consider the time. And three satellites can give us three coordinates of the accurate coordinates.

When it comes to asynchronized, we need one more ,four in total to eliminate the influence.



**Q3**



Q4

