PROBLEM: Using SolidWorks construct an assembly of a 4Bar linkage that has a 2-in drive link, 7-in coupler link, 5-in follower link, and a 5-in ground link.
Use SolidWorks Motion to power the drive link with a motor that rotates the drive link at an angular velocity ω_2=10-1/s.
- For one complete cycle plot the angular velocity of links 3, ω_3, and link 4, ω_4, as a function of time.
- For one complete cycle plot the magnitude of the linear velocity of the joint between the drive link and the coupler link
- For one complete cycle plot magnitude of the linear velocity of the joint between the follower link and the coupler link as a function of time.

GIVEN:
1. 4Bar mechanism
2. 2-in drive link, 7-in coupler link, 5-in follower link, and a 5-in ground link
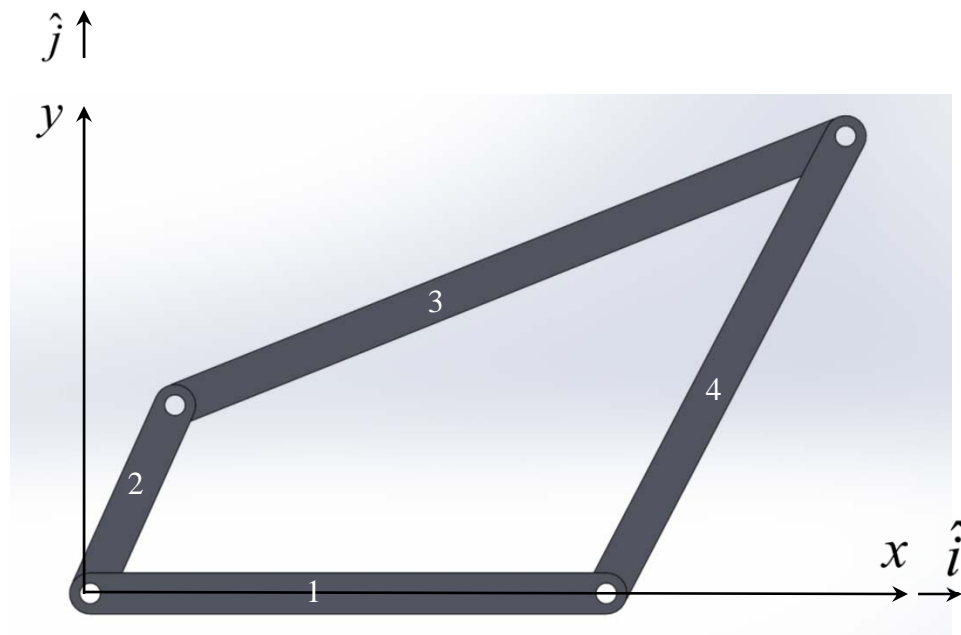3. angular velocity ω_2=10-1/s

ASSUMPTIONS:
1. All links are in the same or parallel planes
2. All links are rigid
3. All joints are frictionless
4. Inertial affects are not considered

FIND:
1. For one complete cycle plot the angular velocity of links 3, ω_3, and link 4, ω_4, as a function of time
2. For one complete cycle plot the magnitude of the linear velocity of the joint between the drive link and the coupler link
3. For one complete cycle plot magnitude of the linear velocity of the joint between the follower link and the coupler link as a function of time
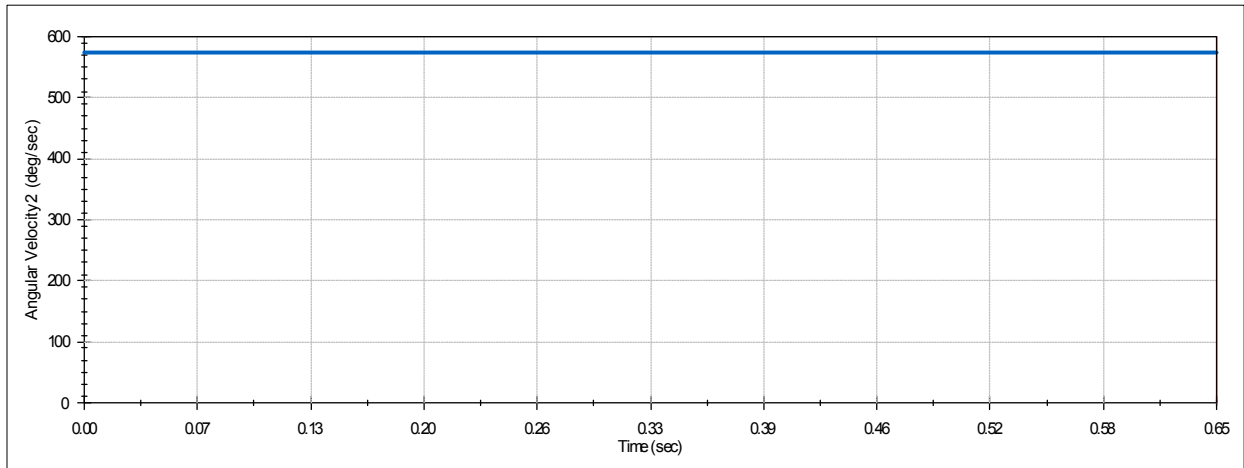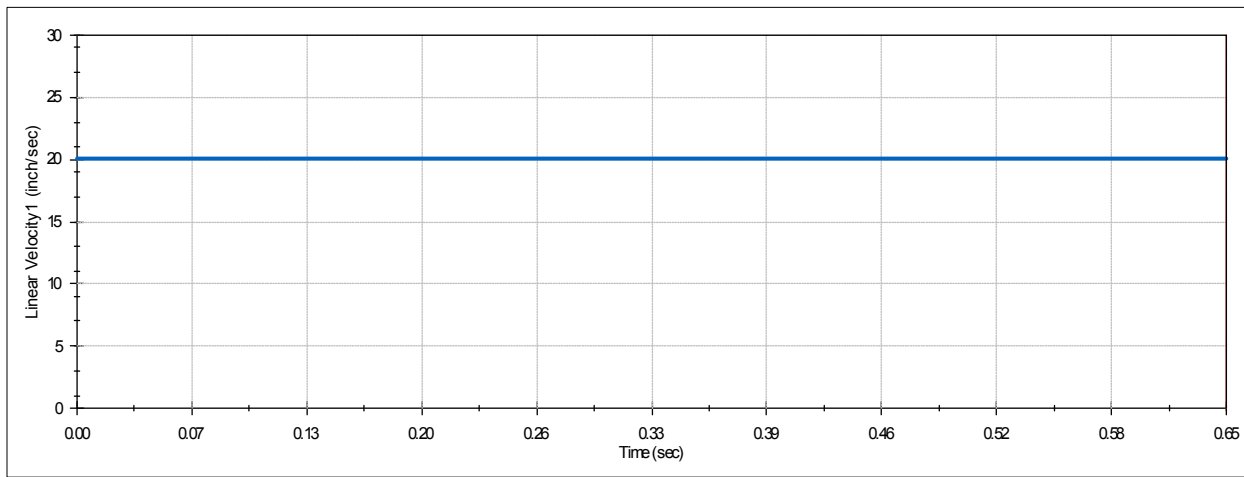
FIGURE:

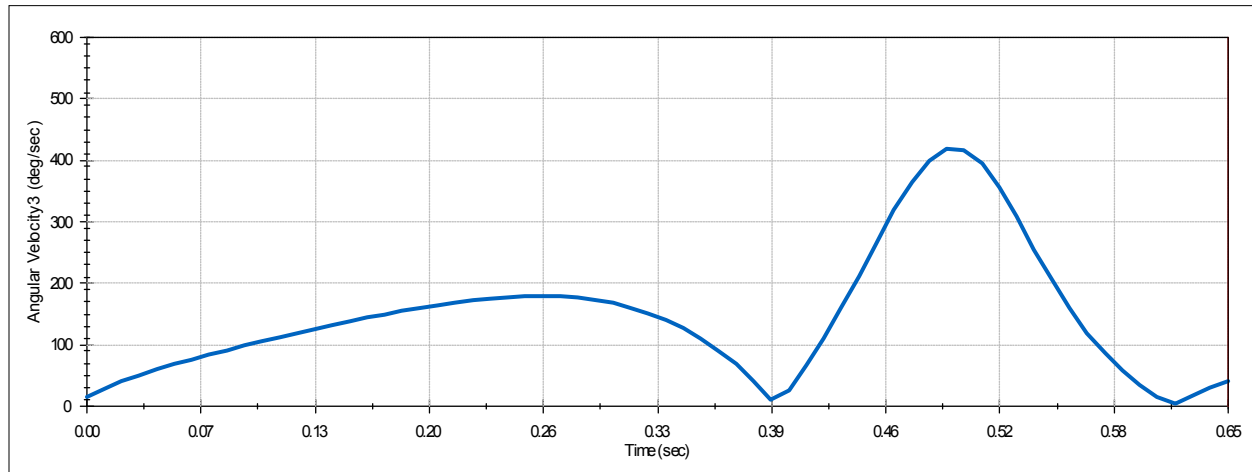## SOLUTION:

The angular velocity of Link 2 is 10-1/s

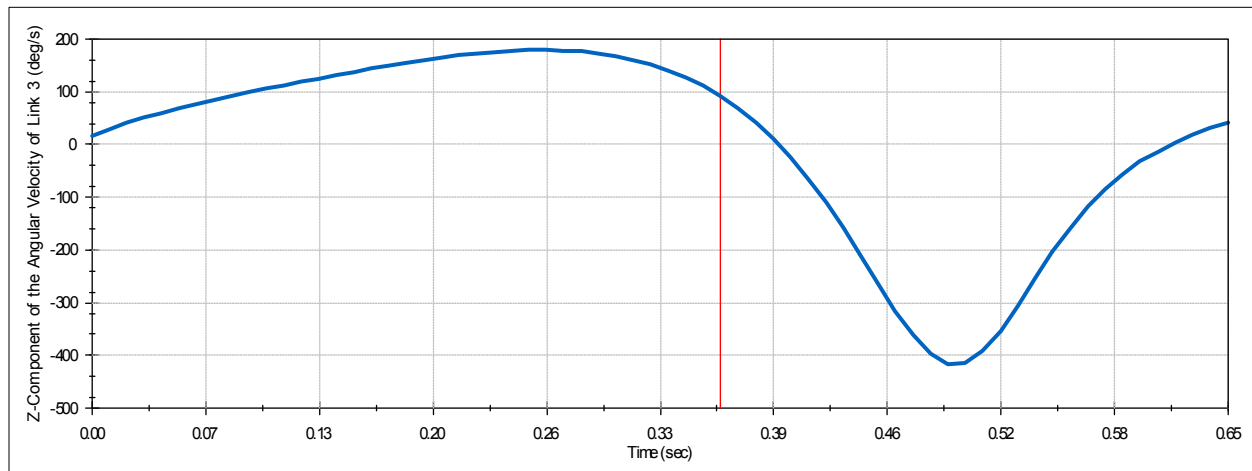$$10 \frac{rad}{s} \cdot \frac{360°}{2\pi \ rad} = 572 \frac{deg}{s}$$

For one complete cycle plot the magnitude of the linear velocity of the joint between the drive link and the coupler link
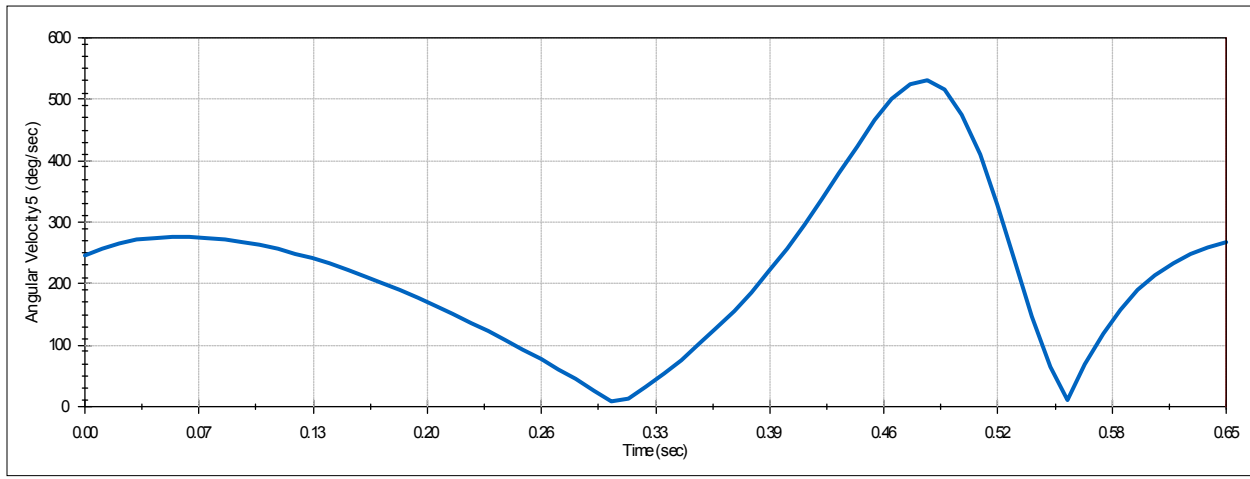
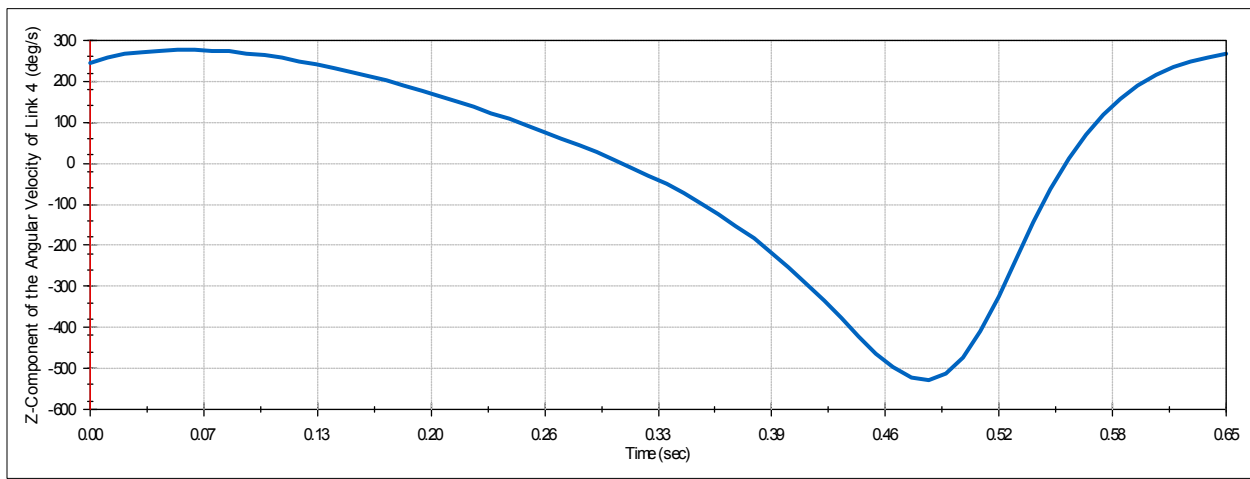For one complete cycle plot the magnitude of the angular velocity of link 3, ω_3, as a function of time

For one complete cycle plot the z-component of the angular velocity of link 3, ω_3, as a function of time
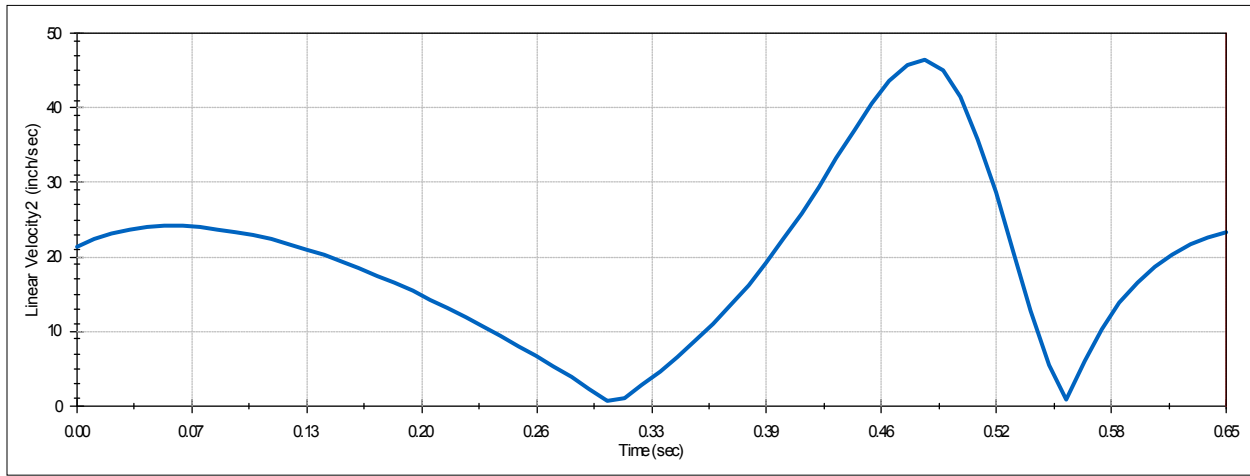
For one complete cycle plot the magnitude of the angular velocity of link 4, ω_4, as a function of time

For one complete cycle plot the z-component of the angular velocity of link 4, ω_4, as a function of time

For one complete cycle plot magnitude of the linear velocity of the joint between the
follower link and the coupler link as a function of time

SUMMARY:

The resolution of these plots were modified using the Motion Property manager to give
the curves a smoother appearance. The plot of the angular velocity of link 4 and the
linear velocity of the joint between link 3 and link 4 have the same shape because of the
relationship between the velocity, linear velocity, and the distance from the point of
rotation.