## Contents



## HW 6 #1, Walter Coe, 2-17-16

```
clear; clc;
```

## Table P6-1 row c, pg. 328

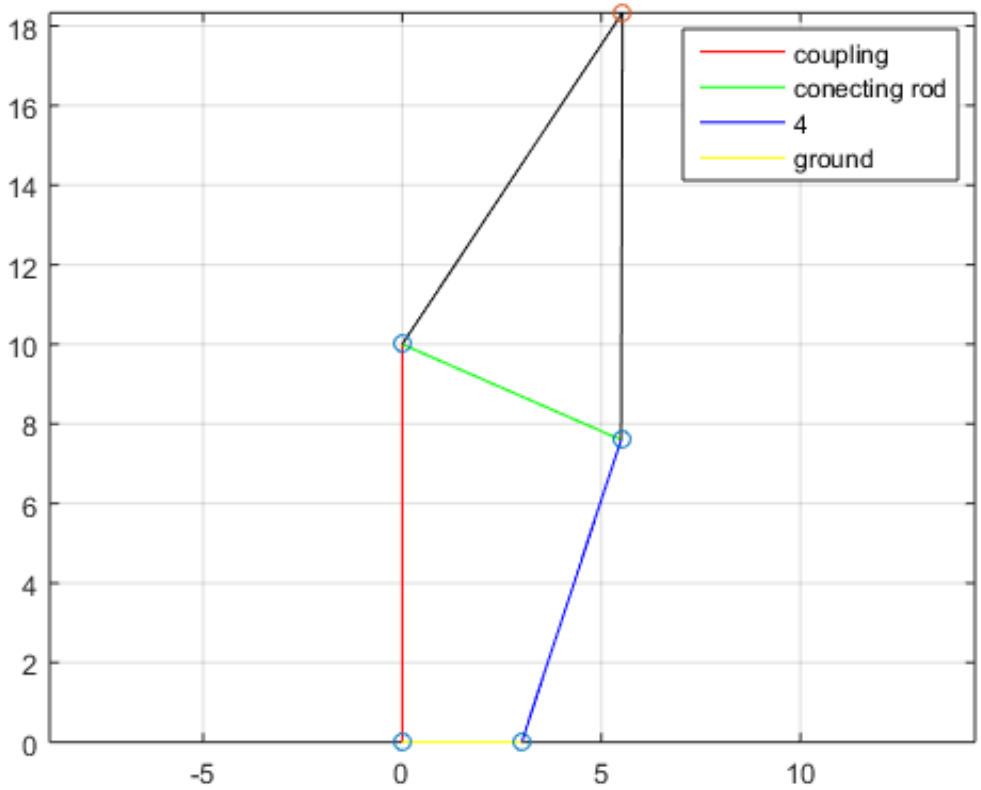
```
lengths = [3 10 6 8];
omega2 = rad2deg(-15);
p = [10*cosd(80) 10*sind(80)];
```

## Solve

```
[angles, angularRates, lengths, linearRates, points, p, vp] = four_bar_func([0 90 0 0],omega2,lengt
hs,p,[1 0])

omega3_ = angularRates(3);
omega4_ = angularRates(4);
vpx = vp(1);
vpy = vp(2);
```

```
angles =

         0   90.0000  -23.5814   71.7979


angularRates =

   1.0e+03 *

         0   -0.8594   -2.7994   -1.5060


lengths =

     3    10     6     8


linearRates =

   1.0e+04 *
```

```
         0         0
    0.8594         0
    1.1445   -0.3763
         0         0


points =

         0         0
         0   10.0000
    5.4990    7.5997
    3.0000         0


p =

    5.5312   18.3310


vp =

   1.0e+04 *

    3.1917   -1.5484
```



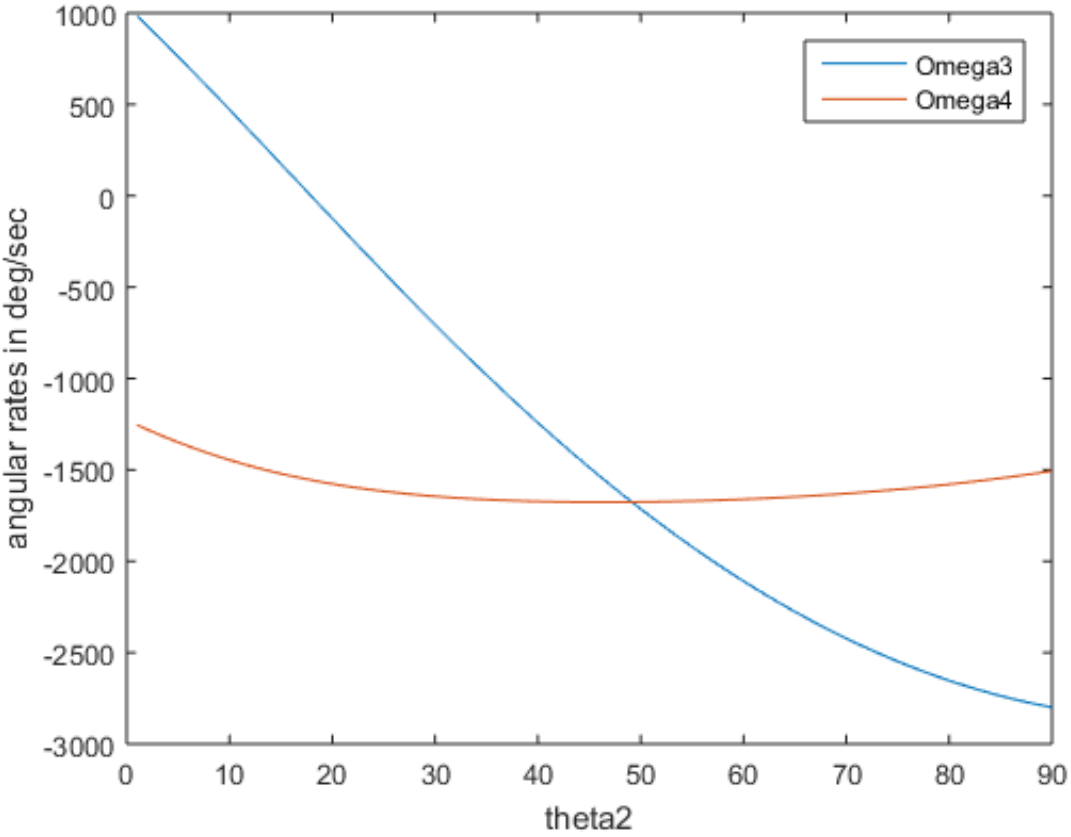

## Measure across theta2 range

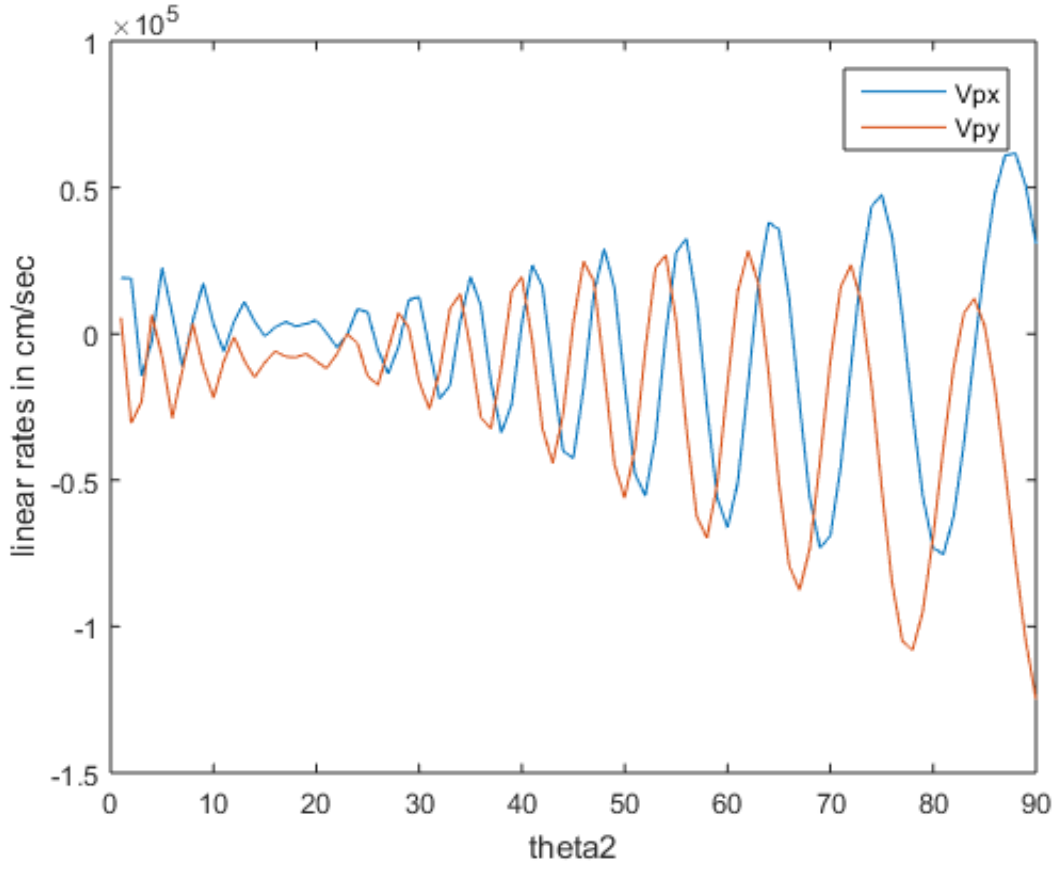
```
theta2 = 0:1:90;

for i=1:length(theta2)

    [angles, angularRates, lengths, linearRates, points, p, vp] = four_bar_func([0 theta2(i) 0 0],o
mega2,lengths,p,[0 0]);

    omega3(i) = angularRates(3);
    omega4(i) = angularRates(4);
    Vpx(i) = vp(1);
    Vpy(i) = vp(2);
    V2(i) = linearRates(2);

end
```

## Report

```
disp(['omega3 is: ', num2str(omega3_), ' degrees per second']);
disp(['omega4 is: ', num2str(omega4_), ' degrees per second']);
disp(['Vpx is: ', num2str(vp(1)), ' cm per second']);
disp(['Vpy is: ', num2str(vp(2)), ' cm per second']);

figure(2); clf;
plot(theta2, omega3, theta2, omega4);
legend('Omega3', 'Omega4');
xlabel('theta2')
ylabel('angular rates in deg/sec')

figure(3); clf;
plot(theta2, Vpx, theta2, Vpy);
legend('Vpx', 'Vpy');
xlabel('theta2')
ylabel('linear rates in cm/sec')
%
% figure(4); clf;
% plot(theta2, V2);
% legend('V2');
% xlabel('theta2')
% ylabel('linear rates in deg/sec')
```

```
omega3 is: -2799.4495 degrees per second
omega4 is: -1505.9711 degrees per second
Vpx is: 30741.3203 cm per second
Vpy is: -124840.0769 cm per second
```


Omega3
Omega4
angular rates in deg/sec
theta2
1000
500
0
-500
-1000
-1500
-2000
-2500
-3000
0
10
20
30
40
50
60
70
80
90


×10^5
Vpx
Vpy
linear rates in cm/sec
theta2
1
0.5
0
-0.5
-1
-1.5
0
10
20
30
40
50
60
70
80
90

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