UNIVERSIDADE DE SÃO PAULO

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Lista G

PME3380 - Modelagem de sistemas dinâmicos
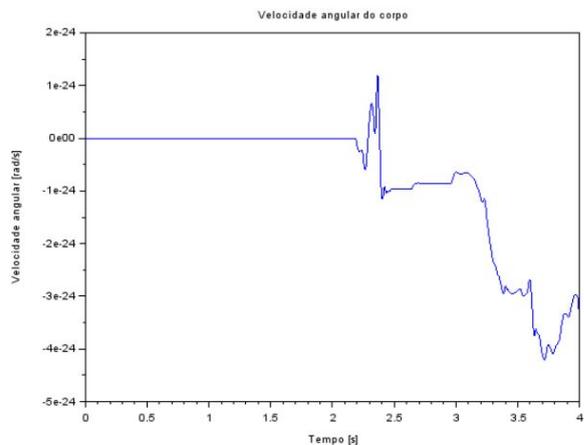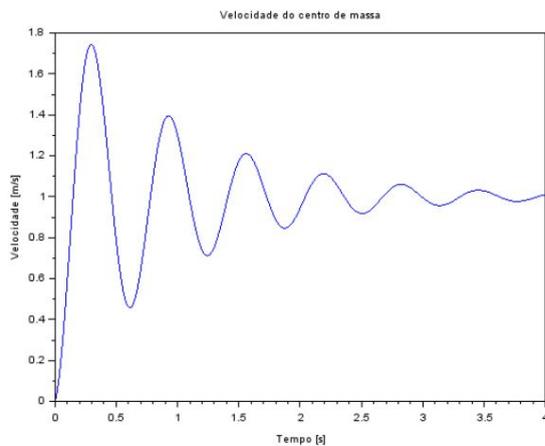
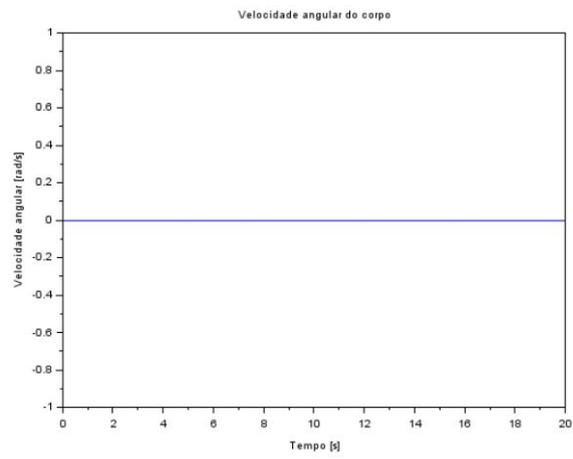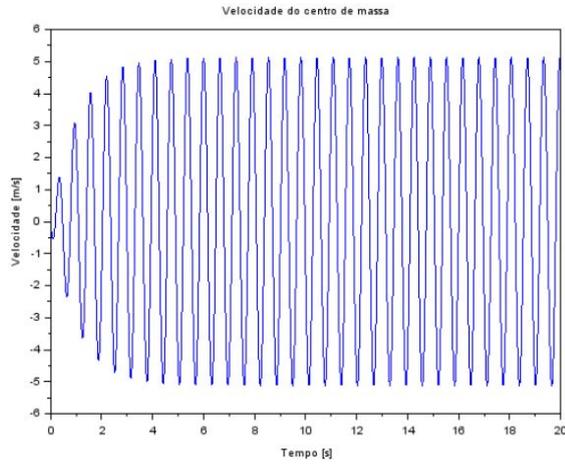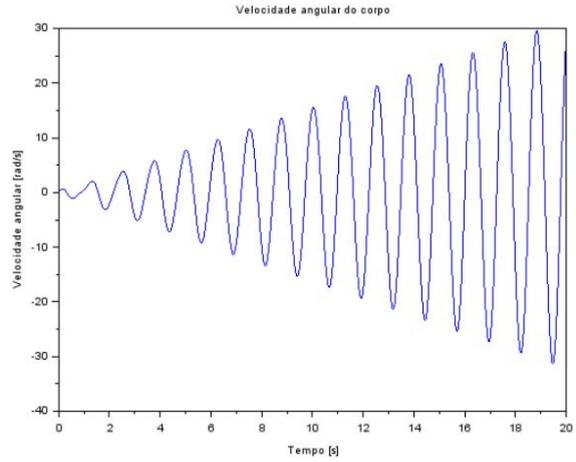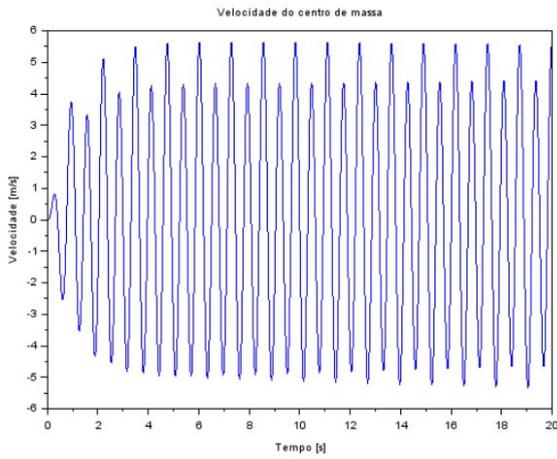**SÃO PAULO**

Lista G

- Questão 1

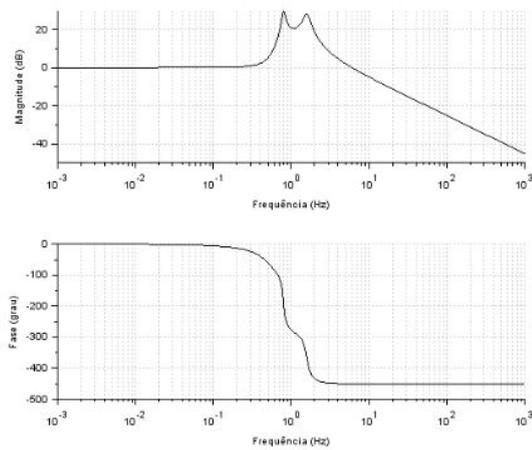- Questão 2

Caso 1:

Caso 2:

Caso 3:

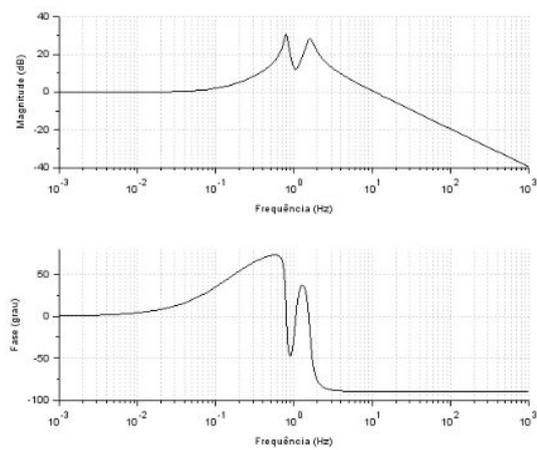- Questão 3
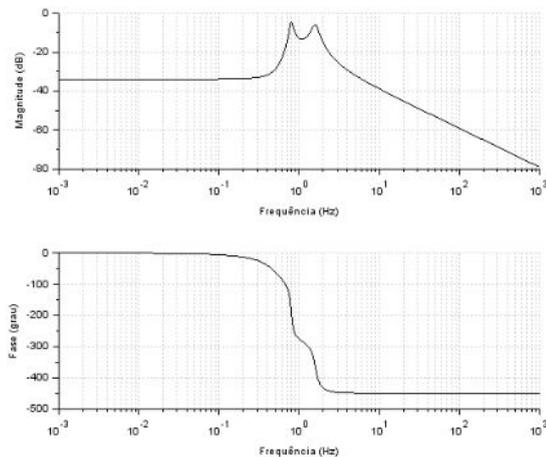
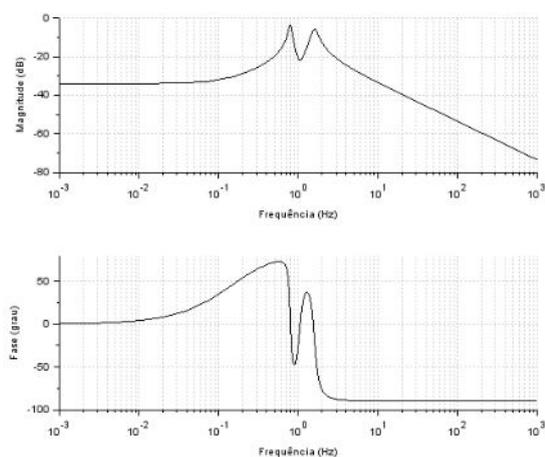Para Xa: Para Xb:

Para Vg: Para w:


```scilab
1  clear
2  clc
3  xdel(winsid())
4  M = 200;
5  J = 512;
6  lA = 0.8;
7  lB = 0.8;
8  kA = 10000;
9  kB = 10000;
10 bA = 200;
11 bB = 200;
12 vH = 10;
13 td = (lA + lB)/vH;
14
15 ti = 0;
16 tf = 1;
17 t = linspace(ti,tf,1000);
18 simulação = 3;
19
20 xa0 = 0;
21 xb0 = 0;
22 vg0 = 0;
23 w0 = 0;
1  function dy=susp(t, y)
2      dy(1) = y(3) - lA*y(4);
3      dy(2) = y(3) + lB*y(4);
4      dy(3) = -(kA/M)*y(1) - (kB/M)*y(2)- ((bA + bB)/M)*y(3)
5          + ((bA*lA -bB*lB)/M)*y(4) + (kA/M)*u1(t) + (kB/M)*u2(t)
6          + (bA/M)*u3(t)+(bB/M)*u4(t);
7      dy(4) = (lA*kA/J)*y(1) - (lB*kB/J)*y(2) + ((lA*bA - lB*bB)/J)*y(3)
8          -((bA*lA^2 - bB*lB^2)/M)*y(4) - (lA*kA/J)*u1(t) + (lB*kB/J)*u2(t)
9          -(lA*bA/J)*u3(t) + (lB*bB/J)*u4(t);
10 endfunction
34 Y = ode([xa0;xb0;vg0;w0],0,t,susp);
35 xA = Y(1,:);
36 xB = Y(2,:);
37 vG = Y(3,:);
38 w = Y(4,:);
39 scf(1)
40 plot(t,vG);
41 scf(2)
42 plot(t,w);
43 A = [0,0,1,-lA;0,0,1,lB;-kA/M,-kB/M,-(bA+bB)/M,(bA*lA - bB*lB)/M;lA*kA/J,
44 -lB*kB/J,(lA*bA-lB*bB)/J,-(bA*lA^2 + bB*lB^2)/J];
45 B = [0,0,0,0;0,0,0,0;kA/M,kB/M,bA/M,bB/M;
46 -lA*kA/J,lB*kB/J,-lA*bA/J,lB*bB/J];
47 sistema = syslin('c',A,B,[1,1,1,1]);
48 h = ss2tf(sl);
49 scf(3);
50 bode(h(1,1));
51 scf(4);
52 bode(h(1,2));
53 scf(5);
54 bode(h(1,3));
55 scf(6);
56 bode(h(1,4));
```