EE547 (PMP) Midterm - Winter 2015

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Click here to see the midterm code.

Contents

Initialization

```
function midterm()
```

```
opengl('save', 'software')
format shortG
set(0, 'defaultTextInterpreter', 'latex');
numerical_precision = 1e-9;
syms s x x_1 x_2 x_3 u t t_0
```

Problem 1

a) Linearize the system around equilibrium points

```
x = [x_1; x_2; x_3];
f = [-9*x_1 - 4*x_2 - (1+x_3)*x_3 + sin(x_3) + sin(u);...
     (x_2*x_3 - 4)*x_1 - 10*sin(x_2) + 3*cos(x_3) + x_3^2*sin(u);...
     9*x_1 + (x_1^2 - 4)*x_3 - 10*x_2 + u];
g = [x_1 + x_2*x_3 + sin(u);...
     x_2 + x_1*x_3 + u^2;...
     x_3 + x_2*x_3 + cos(u)];
render_latex(['f = ' latex(f)], 12, 0.7)
render_latex(['g = ' latex(g)], 12, 0.7)
```