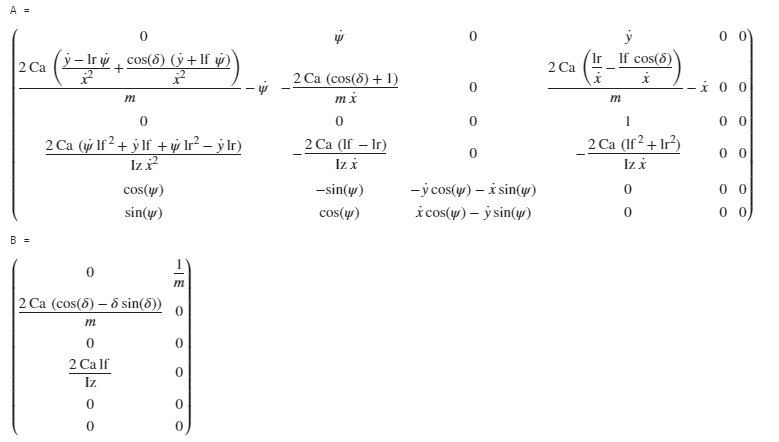
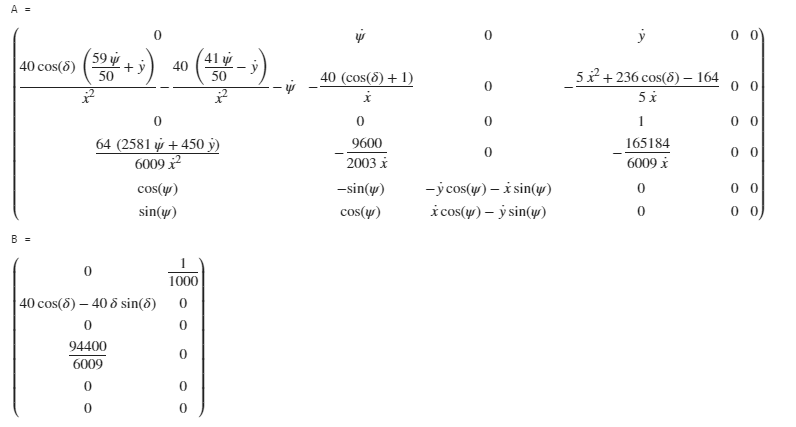
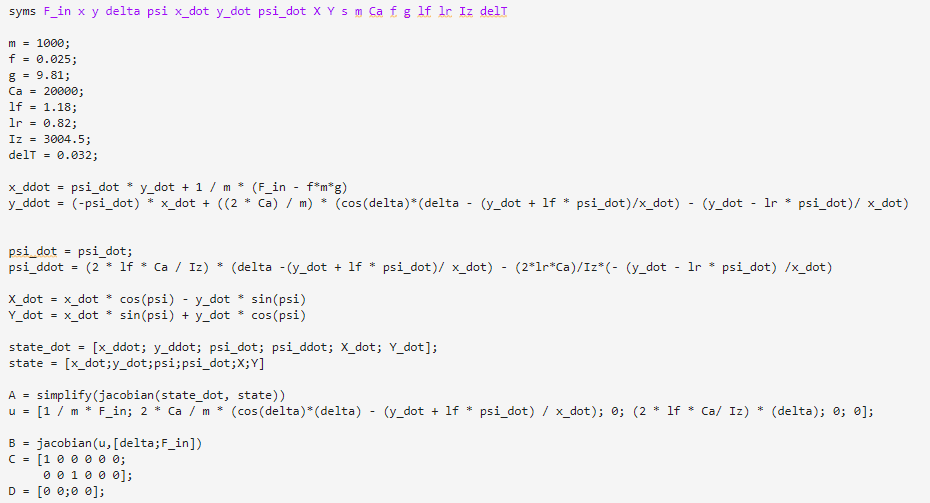
**24-677 Modern Control Theory  
Project 1**

**Exercise 1:**

1. **Linearized State Equations for Arbitrary Point**

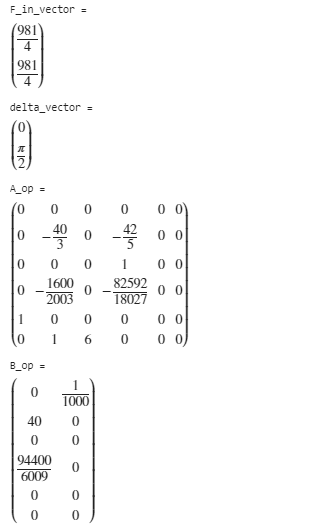
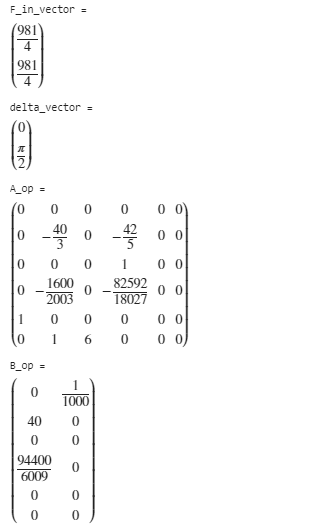


**With Terms and Values Substituted In**

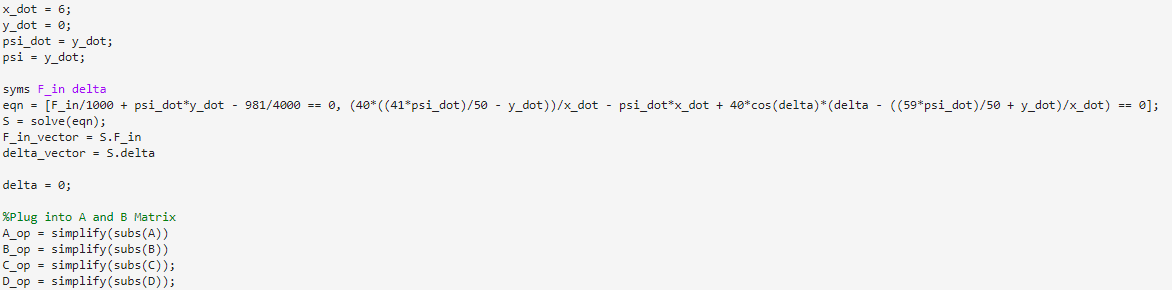
**MATLAB Code** 

1. **Linearized Model about Operating Point**

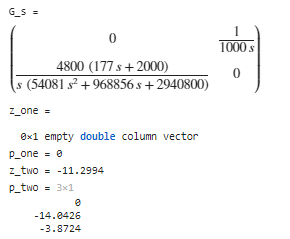
**Operating Point Calculation and Updated Matrixes**

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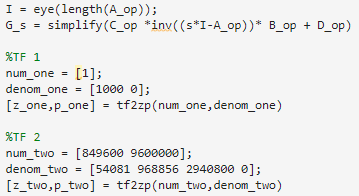
**MATLAB Code**



1. **Transfer Functions**

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**MATLAB Code**

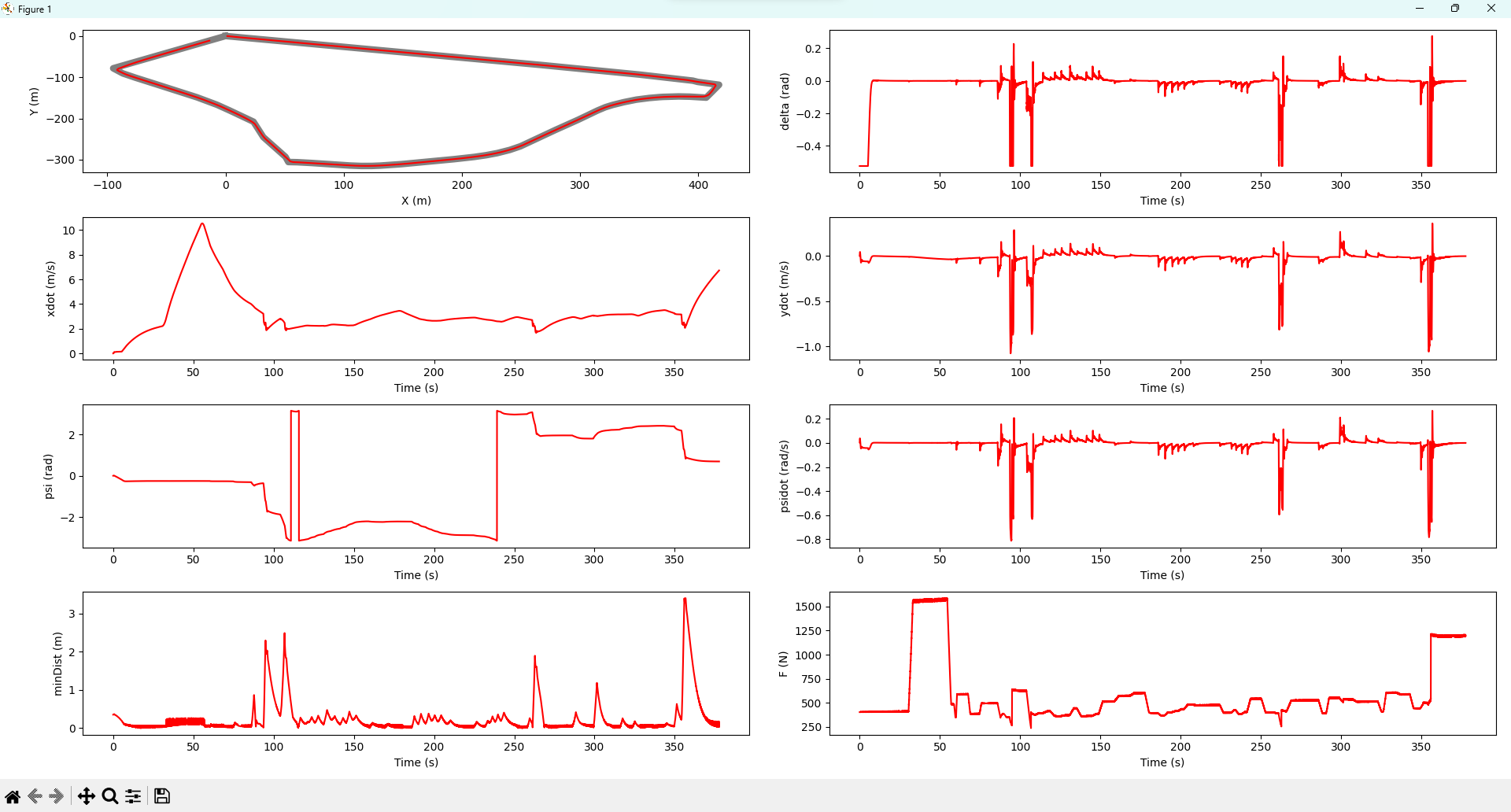
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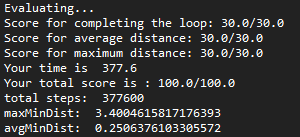
**TF 1: Zeros: N/A Poles: s = 0**

**TF 2: Zeros: -11.04 Poles: s = 0, -14.04, -3.87**

**Exercise 2:**

**Program Graphs**

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