

1. Fill in the missing steps between Eq. (2) of your class notes on Euler angle rates and the final expression given in Nelson in Eq. (3.32).
2. Problem 3.1 in Nelson
3. For problem 6 in assignment #2:
 - a) Linearize the \dot{U}, \dot{V} and \dot{W} equations for this situation, taking into account that q_o and r_o are not zero for this situation
 - b) Linearize the \dot{P}, \dot{Q} and \dot{R} equations for this situation.
 - c) Are the dynamics still separable into longitudinal and lateral?
4. Attached are two mfiles. The file 'F104A' writes the data for this aircraft given in Appendix A to a file called 'newname', and calls the mfile 'Long' to compute the eigenvalues and eigenvectors of A_{long} , and output the eigenvalues. You are to write a similar routine to output the eigenvalues of the lateral dynamics. Call this routine 'Lat'. Run the mfile F104A to execute your routine, and submit a copy of your mfile, and the longitudinal and lateral eigenvalues you got for this problem.

Note: The F104A file assumes that the Long file exists, so if you want to run it without the Long file, then comment line 95.

Answers:

4. Lateral Eigenvalues	Damping	Freq. (rad/s)
-5.13e-003	1.00e+000	5.13e-003
-1.15e-002 + 2.78e+000i	4.13e-003	2.78e+000
-1.15e-002 - 2.78e+000i	4.13e-003	2.78e+000
-1.09e+000	1.00e+000	1.09e+000