

UNIVERSITY OF NOTRE DAME
Aerospace and Mechanical Engineering

AME 301: Differential Equations, Vibrations and Control
Homework 11

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Fall 2003

Issued: December 1, 2003
Due: December 3, 2003 (US)
Due: 4 December 2003 (UK)

1. For each of the pole-zero plots of a transfer function illustrated in Figures 1 through 6, match the corresponding impulse response illustrated in Figures 7 through 12. Explain your reasoning. Five points will be earned for each corresponding match and five points will be earned for a correct and coherent explanation.
2. For each of the pole-zero plots of a transfer function illustrated in Figures 13 through 17, match the corresponding step response illustrated in Figures 18 through 22. Explain your reasoning. Five points will be earned for each corresponding match and five points will be earned for a correct and coherent explanation.

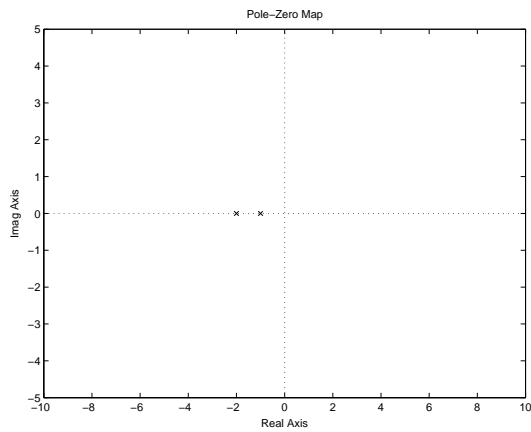


Figure 1. Pole-zero locations.

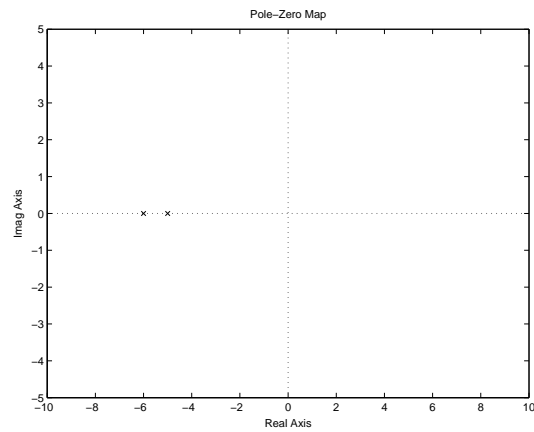


Figure 2. Pole-zero locations.

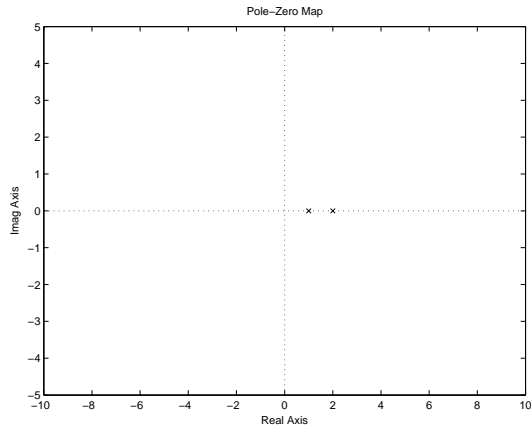


Figure 3. Pole-zero locations.

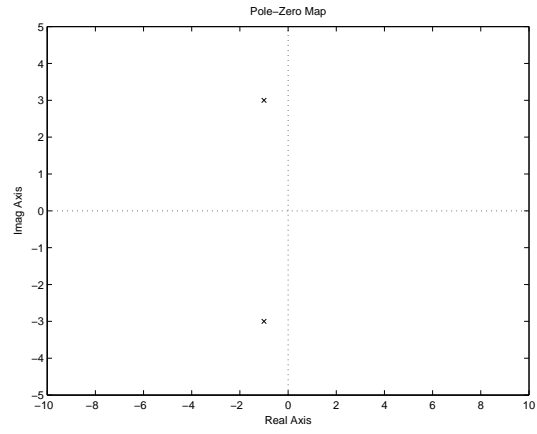


Figure 4. Pole-zero locations.

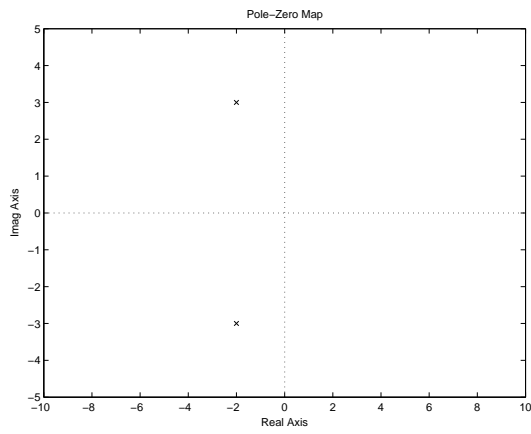


Figure 5. Pole-zero locations.

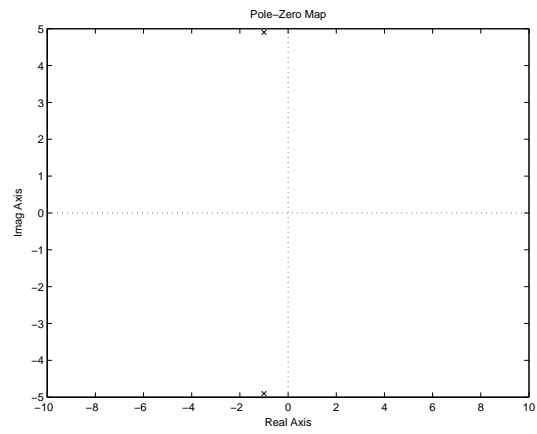


Figure 6. Pole-zero locations.

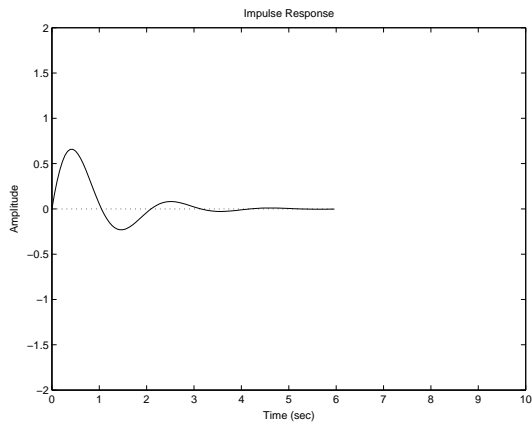


Figure 7. Impulse response.

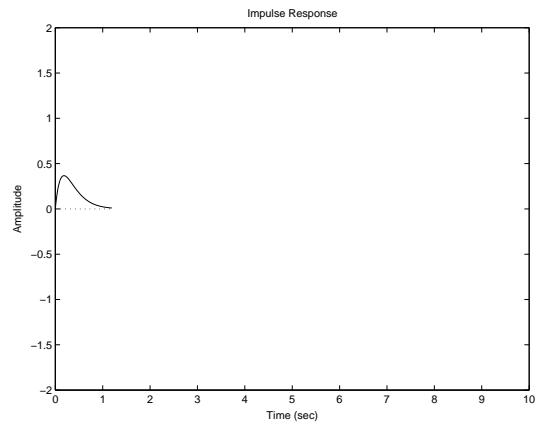


Figure 8. Impulse response.

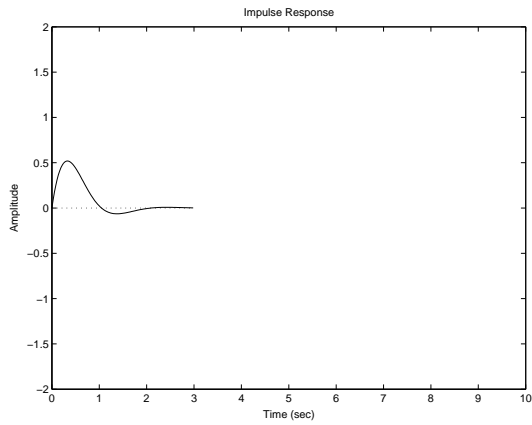


Figure 9. Impulse response.

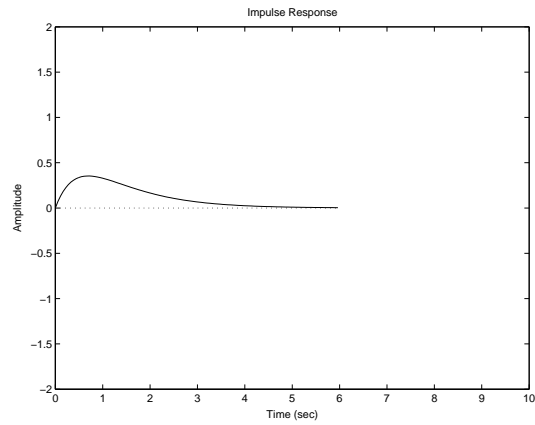


Figure 10. Impulse response.

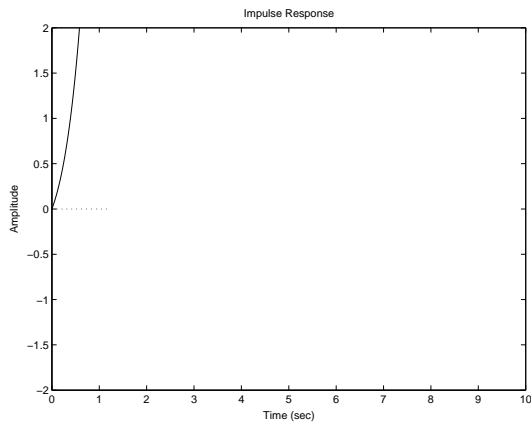


Figure 11. Impulse response.

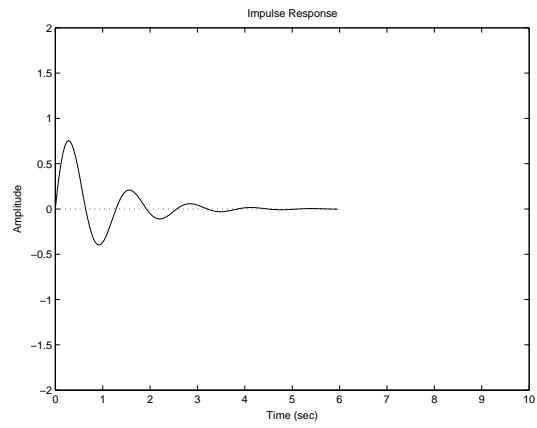


Figure 12. Impulse response.

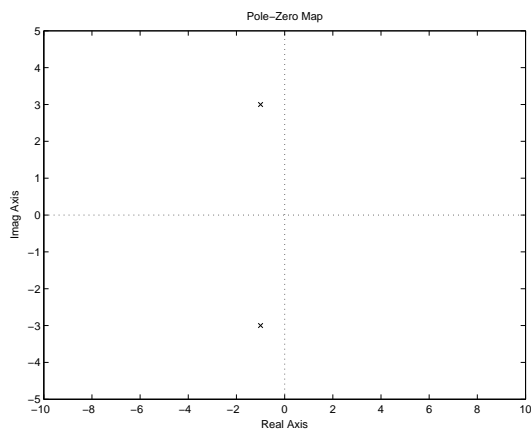


Figure 13. Pole-zero locations.

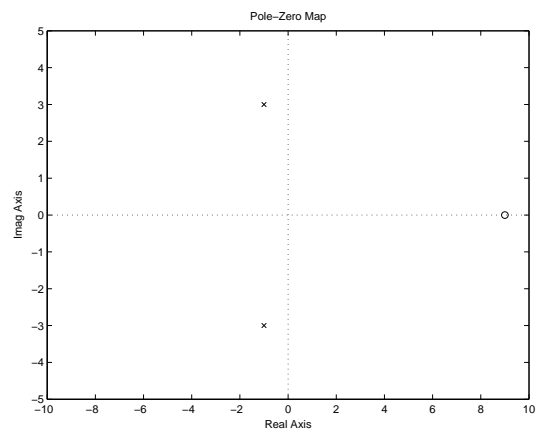


Figure 14. Pole-zero locations.

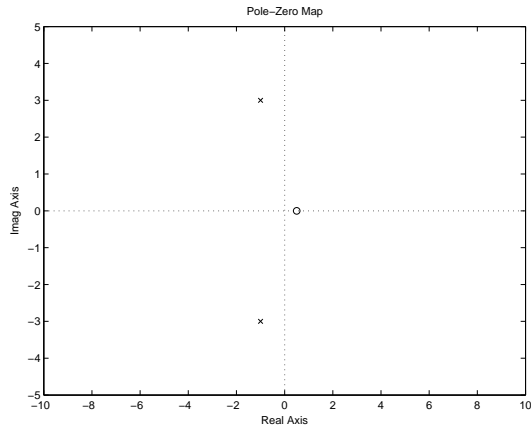


Figure 15. Pole-zero locations.

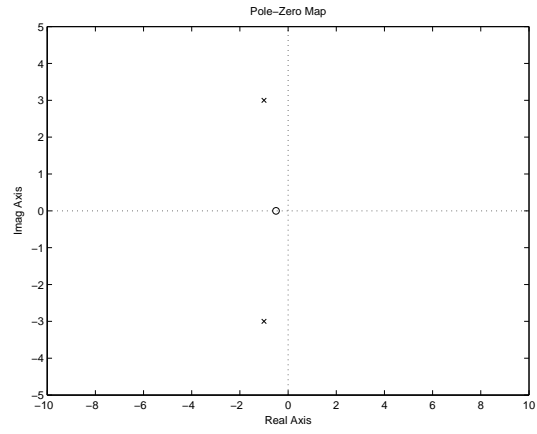


Figure 16. Pole-zero locations.

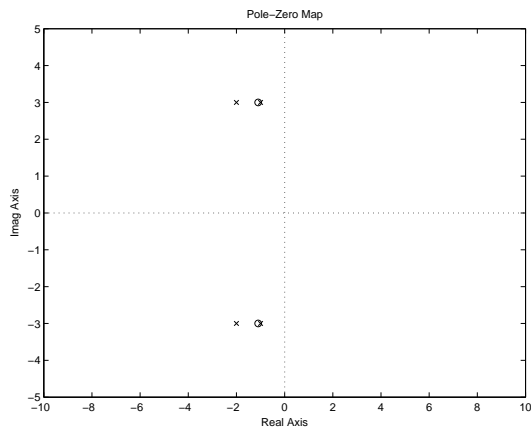


Figure 17. Pole-zero locations.

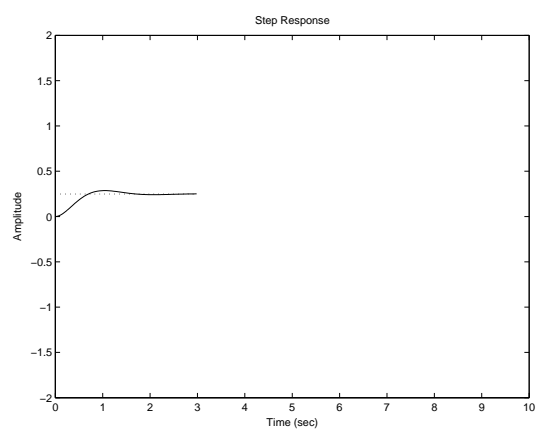


Figure 18. Step response.

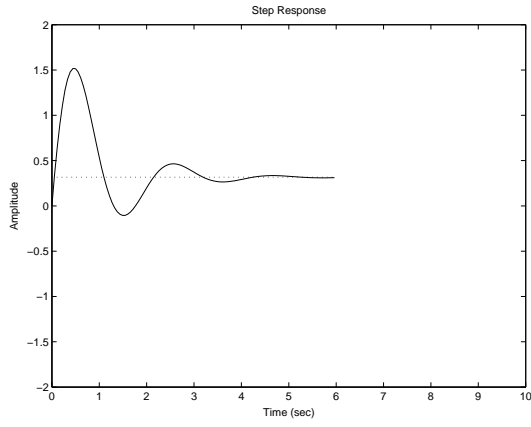


Figure 19. Step response.

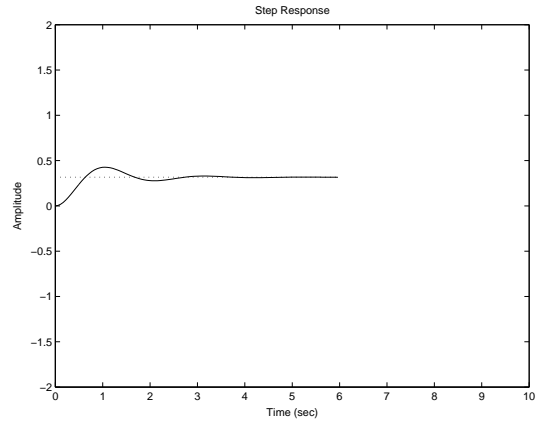


Figure 20. Step response.

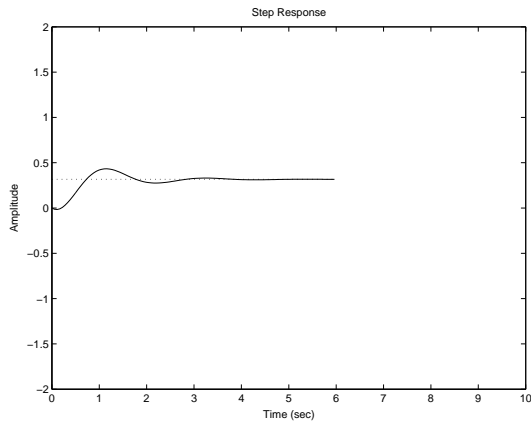


Figure 21. Step response.

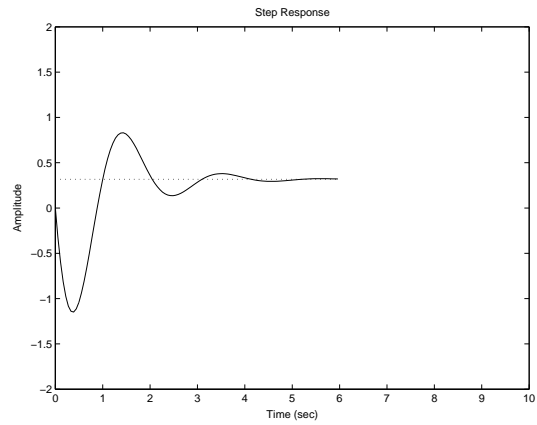


Figure 22. Step response.