

## Chapter 2

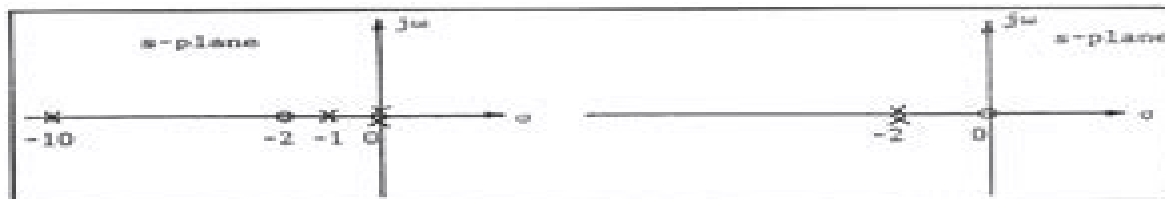
**2-1 (a)** Poles:  $s = 0, 0, -1, -10$ ;

Zeros:  $s = -2, \infty, \infty, \infty$ .

**(b)** Poles:  $s = -2, -2$ ;

Zeros:  $s = 0$ .

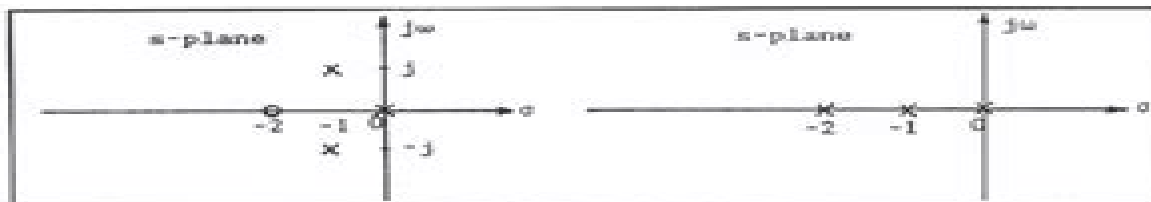
The pole and zero at  $s = -1$  cancel each other.



**(c)** Poles:  $s = 0, -1 + j, -1 - j$ ;

Zeros:  $s = -2$ .

**(d)** Poles:  $s = 0, -1, -2, \infty$ .



**2-2) a)** 
$$G(s) = \frac{(s+1)}{s(s+2)(s+3)^2}$$

**b)** 
$$G(s) = \frac{s^2}{(s+1)(s+4)}$$

**c)** 
$$G(s) = \frac{s^2-1}{s^2(s+3)(s+1)^2}$$

**2-3)**

**MATLAB code:**

# Automatic Control Systems 9th Edition Solution Manual

**Arturo Cuomo**



## **Automatic Control Systems 9th Edition Solution Manual:**

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## **Table of Contents Automatic Control Systems 9th Edition Solution Manual**

1. Understanding the eBook Automatic Control Systems 9th Edition Solution Manual
  - The Rise of Digital Reading Automatic Control Systems 9th Edition Solution Manual
  - Advantages of eBooks Over Traditional Books
2. Identifying Automatic Control Systems 9th Edition Solution Manual
  - Exploring Different Genres
  - Considering Fiction vs. Non-Fiction
  - Determining Your Reading Goals
3. Choosing the Right eBook Platform
  - Popular eBook Platforms
  - Features to Look for in an Automatic Control Systems 9th Edition Solution Manual
  - User-Friendly Interface
4. Exploring eBook Recommendations from Automatic Control Systems 9th Edition Solution Manual
  - Personalized Recommendations
  - Automatic Control Systems 9th Edition Solution Manual User Reviews and Ratings
  - Automatic Control Systems 9th Edition Solution Manual and Bestseller Lists

5. Accessing Automatic Control Systems 9th Edition Solution Manual Free and Paid eBooks
  - Automatic Control Systems 9th Edition Solution Manual Public Domain eBooks
  - Automatic Control Systems 9th Edition Solution Manual eBook Subscription Services
  - Automatic Control Systems 9th Edition Solution Manual Budget-Friendly Options
6. Navigating Automatic Control Systems 9th Edition Solution Manual eBook Formats
  - ePub, PDF, MOBI, and More
  - Automatic Control Systems 9th Edition Solution Manual Compatibility with Devices
  - Automatic Control Systems 9th Edition Solution Manual Enhanced eBook Features
7. Enhancing Your Reading Experience
  - Adjustable Fonts and Text Sizes of Automatic Control Systems 9th Edition Solution Manual
  - Highlighting and Note-Taking Automatic Control Systems 9th Edition Solution Manual
  - Interactive Elements Automatic Control Systems 9th Edition Solution Manual
8. Staying Engaged with Automatic Control Systems 9th Edition Solution Manual
  - Joining Online Reading Communities
  - Participating in Virtual Book Clubs
  - Following Authors and Publishers Automatic Control Systems 9th Edition Solution Manual
9. Balancing eBooks and Physical Books Automatic Control Systems 9th Edition Solution Manual
  - Benefits of a Digital Library
  - Creating a Diverse Reading Collection Automatic Control Systems 9th Edition Solution Manual
10. Overcoming Reading Challenges
  - Dealing with Digital Eye Strain
  - Minimizing Distractions
  - Managing Screen Time
11. Cultivating a Reading Routine Automatic Control Systems 9th Edition Solution Manual
  - Setting Reading Goals Automatic Control Systems 9th Edition Solution Manual
  - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Automatic Control Systems 9th Edition Solution Manual
  - Fact-Checking eBook Content of Automatic Control Systems 9th Edition Solution Manual
  - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

#### 14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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