Multiple Choice Questions and Answers

1. How do you obtain the length of a vector in R?

a) Using the length() function

b) Using the size() function

c) Using the count() function

d) Using the dim() function

Answer: a) Using the length() function

2. What is the purpose of vectors in R?

a) To store multiple values of the same data type

b) To define mathematical functions

c) To perform logical operations

d) To represent one-dimensional arrays

Answer: a) To store multiple values of the same data type

3. How can you create a vector of integers from 1 to 10 in R?

a) seq(1, 10)

b) integers(1:10)

c) vector(1:10)

d) 1:10

Answer: d) 1:10

4. Which operator is used for extracting elements of a vector using subscripts in R?

a) @

b) $

c) []

d) ()

Answer: c) []

5. What is the primary purpose of scalar operations in R?

a) To perform operations on individual elements of a vector

b) To combine multiple vectors into one

c) To create new vectors

d) To remove elements from a vector

Answer: a) To perform operations on individual elements of a vector

6. Which of the following is a valid way to create a vector in R?

a) vector(1, 2, 3)

b) c(1, 2, 3)

c) array(1, 2, 3)

d) list(1, 2, 3)

Answer: b) c(1, 2, 3)

7. What function is used to generate sequences of numbers in R?

a) seq()

b) create_seq()

c) generate_sequence()

d) make_seq()

Answer: a) seq()

8. What is the purpose of working with logical subscripts in R?

a) To subset vectors based on logical conditions

b) To perform arithmetic operations on logical values

c) To create new logical vectors

d) To filter out non-logical elements from a vector

Answer: a) To subset vectors based on logical conditions

9. How do you delete elements from a vector in R?

a) Using the remove() function

b) Using the - operator

c) Using the delete() function

d) Using the pop() function

Answer: b) Using the - operator

10. Which function is used to create lists in R?

a) create_list()

b) list()

c) make_list()

d) new_list()

Answer: b) list()

11. What is the purpose of arrays and matrices as vectors in R?

a) To store multidimensional data

b) To perform complex mathematical operations

c) To represent categorical data

d) To create visualizations

Answer: a) To store multidimensional data

12. What operation is used for vector arithmetic and logical operations in R?

a) vec_op()

b) perform_op()

c) apply_operation()

d) +, -, *, /, etc.

Answer: d) +, -, *, /, etc.

13. What function is used to add elements to a vector in R?

a) add_element()

b) insert()

c) append()

d) push_back()

Answer: c) append()

14. How do you obtain the length of a vector in R?

a) Using the length() function

b) Using the size() function

c) Using the count() function

d) Using the dim() function

Answer: a) Using the length() function

15. What is the purpose of vector indexing in R?

a) To access specific elements of a vector using their positions

b) To create new vectors by combining existing ones

c) To perform mathematical operations on vectors

d) To remove elements from a vector based on conditions

Answer: a) To access specific elements of a vector using their positions

16. In R, what are factors?

a) Mathematical constants

b) Data structures used for storing vectors

c) Categorical variables used for classification

d) Functions used for statistical calculations

Answer: c) Categorical variables used for classification

17. How are levels defined in factors in R?

a) By default

b) By the user

c) Automatically based on data values

d) By the number of observations

Answer: c) Automatically based on data values

18. Which function is commonly used with factors in R to get the frequency of each level?

a) mean()

b) sum()

c) levels()

d) table()

Answer: d) table()

19. What is the purpose of working with tables in R?

a) To store textual data

b) To summarize and analyze data

c) To perform mathematical operations

d) To create visualizations

Answer: b) To summarize and analyze data

20. How can you extract a subtable from a larger table in R?

a) Using the extract() function

b) Using the subset() function

c) Using square brackets [ ] with row and column indices

d) Using the filter() function

Answer: c) Using square brackets [ ] with row and column indices

21. What function is used to find the largest cells in a table in R?

a) max()

b) min()

c) which.max()

d) which.min()

Answer: c) which.max()

22. Which of the following is NOT a mathematical function available in R?

a) sin()

b) cos()

c) avg()

d) sqrt()

Answer: c) avg()

23. How do you calculate the probability of an event in R?

a) Using the probability() function

b) Using the p() function

c) Using the prob() function

d) Using specific probability distribution functions

Answer: d) Using specific probability distribution functions

24. What functions are used to compute cumulative sums and products in R?

a) cumsum() and cumprod()

b) sum() and prod()

c) cumulative_sum() and cumulative_product()

d) add() and multiply()

Answer: a) cumsum() and cumprod()

25. In R, how do you calculate the minimum and maximum values of a dataset?

a) Using the min() and max() functions

b) Using the minimum() and maximum() functions

c) Using the min_value() and max_value() functions

d) Using the range() function

Answer: a) Using the min() and max() functions

26. What does calculus refer to in the context of R programming?

a) The study of mathematical functions

b) The process of data transformation

c) The application of statistical methods

d) The study of rates of change and accumulation

Answer: d) The study of rates of change and accumulation

27. Which function is commonly used for statistical distributions in R?

a) stats()

b) dist()

c) distr()

d) d()

Answer: d) d()

28. How can factors and tables be manipulated in R?

a) Using mathematical operations

b) Using statistical functions

c) Using built-in functions specific to factors and tables

d) Using matrix operations

Answer: c) Using built-in functions specific to factors and tables

29. What is the primary role of factors in R?

a) To represent numerical values

b) To handle missing data

c) To store categorical data

d) To perform arithmetic calculations

Answer: c) To store categorical data

30. How are levels defined in factors in R?

a) By default

b) By the user

c) Automatically based on data values

d) By the number of observations

Answer: c) Automatically based on data values

31. What function is used to create a table in R?

a) table()

b) create_table()

c) make_table()

d) generate_table()

Answer: a) table()

32. Which function is used to extract a subtable from a larger table in R?

a) extract()

b) subset()

c) slice()

d) Square brackets [ ] with row and column indices

Answer: d) Square brackets [ ] with row and column indices

33. What does the which.max() function do in R?

a) Returns the maximum value in a dataset

b) Returns the index of the maximum value in a dataset

c) Returns the number of maximum values in a dataset

d) Returns the sum of maximum values in a dataset

Answer: b) Returns the index of the maximum value in a dataset

34. Which function is used to compute cumulative sums in R?

a) cumsum()

b) sum()

c) cumulative_sum()

d) sum_cum()

Answer: a) cumsum()

35. What is the purpose of the min() and max() functions in R?

a) To compute the mean and median of a dataset

b) To calculate the range of a dataset

c) To identify the minimum and maximum values in a dataset

d) To perform matrix operations

Answer: c) To identify the minimum and maximum values in a dataset

36. What is the primary role of the d() function in R?

a) To define data frames

b) To manipulate factors

c) To compute derivatives

d) To generate random numbers following a distribution

Answer: d) To generate random numbers following a distribution

37. How are factors and levels related in R?

a) Factors are subsets of levels

b) Levels are subsets of factors

c) Factors represent levels in categorical data

d) Levels represent factors in numerical data

Answer: c) Factors represent levels in categorical data

38. Which function is used to find the largest cells in a table in R?

a) max_table()

b) largest_cell()

c) which.max()

d) max()

Answer: d) max()

39. What does the sum() function do in R?

a) Computes the sum of elements in a vector

b) Computes the product of elements in a vector

c) Computes the cumulative sum of elements in a vector

d) Computes the mean of elements in a vector

Answer: a) Computes the sum of elements in a vector

40. In R, what is the output of which.max(vector)?

a) Index of the maximum value in the vector

b) Index of the minimum value in the vector

c) The maximum value in the vector

d) The minimum value in the vector

Answer: a) Index of the maximum value in the vector

41. How is the cumsum() function used in R?

a) To compute the sum of elements cumulatively

b) To compute the cumulative product of elements

c) To compute the mean of elements cumulatively

d) To compute the standard deviation of elements

Answer: a) To compute the sum of elements cumulatively

42. Which function calculates the probability of an event in R?

a) prob()

b) probability()

c) p()

d) d()

Answer: c) p()

43. What does the min() function return in R?

a) The maximum value in a vector

b) The minimum value in a vector

c) The range of values in a vector

d) The sum of values in a vector

Answer: b) The minimum value in a vector

44. How are factors different from character strings in R?

a) Factors are used for numerical data, while character strings are for categorical data.

b) Factors are stored as integers with associated labels, while character strings are sequences of characters.

c) Factors are mutable, while character strings are immutable.

d) Factors can be sorted, while character strings cannot.

Answer: b) Factors are stored as integers with associated labels, while character strings are sequences of characters.

45. What is the purpose of the distr() function in R?

a) To display distribution plots

b) To create data distributions

c) To generate random numbers following a distribution

d) To perform statistical tests on distributions

Answer: c) To generate random numbers following a distribution

46. How are factors and tables commonly used together in R?

a) Factors are converted into tables for statistical analysis.

b) Tables are used to summarize factor levels in data.

c) Factors are used as column headers in tables.

d) Tables are converted into factors for visualization purposes.

Answer: b) Tables are used to summarize factor levels in data.

47. Which function is used to perform mathematical operations on tables in R?

a) apply()

b) table_math()

c) math.table()

d) table_apply()

Answer: a) apply()

48. In R, what does the minima() function compute?

a) The minimum value in a vector

b) The minimum value in each row or column of a matrix

c) The minimum value among several vectors

d) The minimum value among several matrices

Answer: b) The minimum value in each row or column of a matrix

49. How is the distr() function used in R?

a) To display distribution plots

b) To create data distributions

c) To generate random numbers following a distribution

d) To perform statistical tests on distributions

Answer: a) To display distribution plots

50. What is the purpose of the p() function in R?

a) To generate random numbers following a distribution

b) To compute the probability of an event

c) To perform statistical tests on distributions

d) To display distribution plots

Answer: b) To compute the probability of an event

51. Which function is used to calculate cumulative sums in R?

a) cumsum()

b) sum()

c) cumulative()

d) accumulate()

Answer: a) cumsum()

52. How does R handle missing values when calculating minima and maxima?

a) It excludes missing values from the calculations.

b) It treats missing values as zero.

c) It replaces missing values with the mean.

d) It treats missing values as positive infinity.

Answer: a) It excludes missing values from the calculations.

53. What is the output of the which.min(vector) function in R?

a) Index of the minimum value in the vector

b) Index of the maximum value in the vector

c) The minimum value in the vector

d) The maximum value in the vector

Answer: a) Index of the minimum value in the vector

54. In R, what does the d() function do?

a) Computes the sum of elements in a vector

b) Computes derivatives

c) Generates random numbers following a distribution

d) Displays distribution plots

Answer: b) Computes derivatives

55. How are factors commonly represented in R?

a) As strings

b) As integers with associated labels

c) As floating-point numbers

d) As vectors

Answer: b) As integers with associated labels

56. What is the purpose of the levels() function in R?

a) To compute the number of levels in a factor

b) To retrieve the labels of the levels in a factor

c) To generate random levels for a factor

d) To calculate the mean value of each level in a factor

Answer: b) To retrieve the labels of the levels in a factor

57. How can you extract a subtable from a larger table in R?

a) Using the subset() function

b) Using the extract() function

c) Using logical indexing

d) By specifying row and column indices

Answer: c) Using logical indexing

58. What does the table() function do in R?

a) Computes the cumulative sums of values in a vector

b) Displays a summary table of the data

c) Counts the occurrences of each unique value in a vector

d) Calculates the probability of events in a distribution

Answer: c) Counts the occurrences of each unique value in a vector

59. How does R handle non-numeric data when performing mathematical operations?

a) It converts non-numeric data to zeros.

b) It generates an error.

c) It ignores non-numeric data.

d) It treats non-numeric data as missing values.

Answer: b) It generates an error.

60. What is the purpose of the dim() function in R?

a) To compute the dimensions of an object

b) To calculate the determinant of a matrix

c) To generate random numbers following a distribution

d) To display distribution plots

Answer: a) To compute the dimensions of an object

61. Which function is used to calculate the mean value of each level in a factor in R?

a) mean()

b) level_mean()

c) tapply()

d) mean(factor)

Answer: c) tapply()

62. In R, what does the maxima() function compute?

a) The maximum value in a vector

b) The maximum value in each row or column of a matrix

c) The maximum value among several vectors

d) The maximum value among several matrices

Answer: b) The maximum value in each row or column of a matrix

63. What is the purpose of the table_math() function in R?

a) To perform mathematical operations on tables

b) To summarize statistical distributions

c) To create tables from raw data

d) To calculate probabilities

Answer: a) To perform mathematical operations on tables

64. How do you add a column to a data frame in R?

a) Using the append() function

b) Using the $ operator

c) Using the cbind() function

d) Using the add_column() function

Answer: c) Using the cbind() function

65. What is the purpose of the nlevels() function in R?

a) To compute the number of levels in a factor

b) To retrieve the labels of the levels in a factor

c) To generate random levels for a factor

d) To calculate the mean value of each level in a factor

Answer: a) To compute the number of levels in a factor

66. How do you calculate the cumulative sum of elements in a vector in R?

a) Using the cumsum() function

b) Using the sum() function

c) Using the cumulative_sum() function

d) Using the apply() function with the cumsum argument

Answer: a) Using the cumsum() function

67. What is the purpose of the determinant() function in R?

a) To compute the determinant of a matrix

b) To calculate the standard deviation of a dataset

c) To find the correlation coefficient between two variables

d) To estimate the coefficients of a linear regression model

Answer: a) To compute the determinant of a matrix

68. In R, how do you perform element-wise multiplication of two matrices?

a) Using the * operator

b) Using the multiply() function

c) Using the prod() function

d) Using the matmul() function

Answer: a) Using the * operator

69. What is the purpose of the table_math() function in R?

a) To perform mathematical operations on tables

b) To summarize statistical distributions

c) To create tables from raw data

d) To calculate probabilities

Answer: a) To perform mathematical operations on tables

70. How can you find the largest value in a table in R?

a) Using the max() function

b) Using the largest() function

c) Using the apply() function with the max argument

d) Using the table_max() function

Answer: c) Using the apply() function with the max argument

71. What does the rnorm() function in R do?

a) Generates random numbers from a normal distribution

b) Computes the rank of elements in a vector

c) Rounds numeric values to the nearest integer

d) Computes the range of values in a dataset

Answer: a) Generates random numbers from a normal distribution

72. Which function is used to calculate the minimum value of each level in a factor in R?

a) min()

b) level_min()

c) tapply()

d) min(factor)

Answer: c) tapply()

73. In R, how do you obtain the size of a matrix or array?

a) Using the size() function

b) Using the dimensions() function

c) Using the length() function

d) Using the dim() function

Answer: d) Using the dim() function

74. What is the purpose of the math_functions() function in R?

a) To compute mathematical functions

b) To perform arithmetic operations

c) To round numeric values

d) To calculate probabilities

Answer: a) To compute mathematical functions

75. How do you calculate the probability of an event in R?

a) Using the prob() function

b) Using the probability() function

c) Using the p() function

d) Using the appropriate distribution functions

Answer: d) Using the appropriate distribution functions

76. What function in R is commonly used to create graphical plots?

a) summary()

b) create_plot()

c) plot()

d) graph()

Answer: c) plot()

77. How can you customize the color of a plot in R?

a) Using the color() function

b) Using the change_color() function

c) Using the col parameter in the plot() function

d) Using the custom_color() function

Answer: c) Using the col parameter in the plot() function

78. Which function in R is used to save a plot to a file?

a) save_plot()

b) export_plot()

c) write_plot()

d) ggsave()

Answer: d) ggsave()

79. What function in R is used to create three-dimensional plots?

a) plot3d()

b) create_3d_plot()

c) ggplot3d()

d) plot() with type = "3d"

Answer: a) plot3d()

80. What is the purpose of debugging in programming?

a) To write code faster

b) To improve code readability

c) To find and fix errors in code

d) To generate documentation for code

Answer: c) To find and fix errors in code

81. Why is using a debugging tool important?

a) It helps to make the code run faster

b) It allows for real-time collaboration with other programmers

c) It provides insights into code execution and identifies errors

d) It automatically generates code documentation

Answer: c) It provides insights into code execution and identifies errors

82. What are R debugging facilities primarily used for?

a) Generating random data

b) Testing code for syntax errors

c) Finding and fixing bugs in code

d) Creating visualizations

Answer: c) Finding and fixing bugs in code

83. Which statement about debugging tools is true?

a) They are only useful for experienced programmers

b) They can be used to step through code line by line

c) They are not compatible with RStudio

d) They are only available in paid versions of R

Answer: b) They can be used to step through code line by line

84. How can you ensure consistency in debugging simulation code?

a) By using multiple debugging tools simultaneously

b) By running the code in different programming languages

c) By thoroughly documenting the debugging process

d) By using the same debugging tool consistently

Answer: d) By using the same debugging tool consistently

85. What type of errors can be identified using debugging tools?

a) Logical errors

b) Syntax errors

c) Runtime errors

d) All of the above

Answer: d) All of the above

86. What are syntax errors in programming?

a) Errors related to code execution at runtime

b) Errors that occur due to incorrect programming language syntax

c) Errors that cause unexpected program behavior

d) Errors that occur during code optimization

Answer: b) Errors that occur due to incorrect programming language syntax

87. Which debugging tool is commonly used for debugging R code?

a) Spyder

b) PyCharm

c) RStudio

d) Jupyter Notebook

Answer: c) RStudio

88. What is the primary purpose of creating graphical plots in data analysis?

a) To visualize data and identify patterns

b) To generate code documentation

c) To perform statistical analysis

d) To validate machine learning models

Answer: a) To visualize data and identify patterns

89. Which function in R allows you to customize the appearance of a plot?

a) change_plot()

b) modify_plot()

c) customize_plot()

d) par()

Answer: d) par()

90. How can you specify the size of a plot in R?

a) Using the size parameter in the plot() function

b) Using the height and width parameters in the plot() function

c) Using the resize() function

d) Using the plot_size() function

Answer: b) Using the height and width parameters in the plot() function

91. Which file formats are commonly used to save plots in R?

a) .jpg and .gif

b) .pdf and .eps

c) .png and .bmp

d) .txt and .csv

Answer: b) .pdf and .eps

92. In R, what is the purpose of creating three-dimensional plots?

a) To represent data with more than two variables

b) To visualize complex mathematical functions

c) To display images and photos

d) To create interactive visualizations

Answer: a) To represent data with more than two variables

93. What does the term "debugging" refer to in programming?

a) Removing bugs from a program

b) Improving code performance

c) Adding new features to a program

d) Optimizing code for speed

Answer: a) Removing bugs from a program

94. Which statement best describes the purpose of the GDB tool in R?

a) GDB is used to generate documentation for R code

b) GDB is a graphical interface for debugging R code

c) GDB is a command-line debugger for R code

d) GDB is used to execute R code on remote servers

Answer: c) GDB is a command-line debugger for R code

95. What is the significance of ensuring consistency in debugging simulation code?

a) It helps in documenting the debugging process

b) It ensures that the code produces consistent results

c) It reduces the need for code optimization

d) It improves code readability and maintainability

96. What are the fundamental principles of debugging?

a) Testing and documenting

b) Testing and code optimization

c) Understanding and isolating

d) Understanding and code optimization

Answer: c) Understanding and isolating

97. Why is it important to use a debugging tool?

a) To write code more quickly

b) To identify and fix errors in code

c) To improve code readability

d) To execute code more efficiently

Answer: b) To identify and fix errors in code

98. What is the purpose of using R debugging facilities?

a) To improve code performance

b) To execute code on remote servers

c) To identify and fix errors in R code

d) To generate documentation for R code

Answer: c) To identify and fix errors in R code

99. What do "syntax and runtime errors" refer to?

a) Errors related to code execution at runtime

b) Errors related to incorrect programming language syntax

c) Errors that cause unexpected program behavior

d) Errors that occur during code optimization

Answer: a) Errors related to code execution at runtime

100. Which tool can be used for debugging R code itself?

a) RStudio

b) Spyder

c) PyCharm

d) Jupyter Notebook

Answer: a) RStudio

101. What is the purpose of moving up in the world regarding debugging tools?

a) To enhance code performance

b) To improve code readability

c) To use more convenient debugging tools

d) To reduce code complexity

Answer: c) To use more convenient debugging tools

102. How do you define cumulative sums and products in R?

a) Sums and products of all elements in a vector

b) Sums and products of selected elements in a vector

c) Sums and products of matrix elements

d) Sums and products of table elements

Answer: a) Sums and products of all elements in a vector

103. What are some common functions used with factors in R?

a) mean(), median(), sd()

b) table(), levels(), factor()

c) sum(), prod(), max()

d) cumsum(), cumprod(), min()

Answer: b) table(), levels(), factor()

104. How are tables typically represented in R?

a) As matrices

b) As lists

c) As factors

d) As data frames

Answer: d) As data frames

105. Which functions are commonly used for statistical distributions in R?

a) rnorm(), dnorm(), pnorm(), qnorm()

b) sum(), mean(), median(), sd()

c) table(), levels(), factor()

d) cumsum(), cumprod(), min()

Answer: a) rnorm(), dnorm(), pnorm(), qnorm()

106. What is the purpose of creating graphs in R?

a) To enhance code readability

b) To visualize data and relationships

c) To improve code performance

d) To execute code on remote servers

Answer: b) To visualize data and relationships

107. How can graphs be customized in R?

a) By changing the font size only

b) By adding labels and titles

c) By changing the data structure

d) By modifying the programming language

Answer: b) By adding labels and titles

108. Which function is used for saving graphs to files in R?

a) save_graph()

b) save_plot()

c) save_file()

d) ggsave()

Answer: d) ggsave()

109. What is the purpose of creating three-dimensional plots in R?

a) To visualize complex data relationships

b) To perform advanced statistical analysis

c) To optimize code execution

d) To enhance code readability

Answer: a) To visualize complex data relationships

110. What are the fundamental principles of debugging?

a) Identifying and fixing errors in code

b) Enhancing code performance

c) Improving code readability

d) Executing code efficiently

Answer: a) Identifying and fixing errors in code

111. Why is it important to use a debugging tool?

a) To write code more quickly

b) To identify and fix errors in code

c) To improve code readability

d) To execute code more efficiently

Answer: b) To identify and fix errors in code

112. What is the purpose of using R debugging facilities?

a) To improve code performance

b) To execute code on remote servers

c) To identify and fix errors in R code

d) To generate documentation for R code

Answer: c) To identify and fix errors in R code

113. What does "syntax and runtime errors" refer to?

a) Errors related to code execution at runtime

b) Errors related to incorrect programming language syntax

c) Errors that cause unexpected program behavior

d) Errors that occur during code optimization

Answer: a) Errors related to code execution at runtime

114. Which tool can be used for debugging R code itself?

a) RStudio

b) Spyder

c) PyCharm

d) Jupyter Notebook

Answer: a) RStudio

115. What is the purpose of moving up in the world regarding debugging tools?

a) To enhance code performance

b) To improve code readability

c) To use more convenient debugging tools

d) To reduce code complexity

Answer: c) To use more convenient debugging tools

116. How can consistency in debugging simulation code be ensured?

a) By using multiple debugging tools simultaneously

b) By maintaining a consistent coding style

c) By executing code on different platforms

d) By outsourcing debugging tasks

Answer: b) By maintaining a consistent coding style

117. What are some examples of debugging tasks in R programming?

a) Identifying syntax errors

b) Enhancing code readability

c) Optimizing code performance

d) Fixing logical errors

Answer: a) Identifying syntax errors and d) Fixing logical errors

118. Which type of errors can occur during code optimization?

a) Syntax errors

b) Runtime errors

c) Logical errors

d) Performance errors

Answer: d) Performance errors

119. What is the primary focus of learning sets of rules in machine learning?

a) Identifying patterns in data

b) Creating rule-based systems

c) Understanding complex algorithms

d) Enhancing code performance

Answer: b) Creating rule-based systems

120. How are factors and levels used in learning sets of rules?

a) To categorize data into different groups

b) To perform statistical analysis

c) To enhance code readability

d) To optimize code execution

Answer: a) To categorize data into different groups

121. What are the functions commonly used with factors in learning sets of rules?

a) Math functions

b) Statistical functions

c) Rule-based functions

d) Common functions

Answer: d) Common functions

122. How do you work with tables in learning sets of rules?

a) By performing statistical analysis

b) By extracting subsets of data

c) By creating rule-based systems

d) By applying matrix operations

Answer: b) By extracting subsets of data

123. What type of operations can be performed on tables in learning sets of rules?

a) Statistical operations

b) Matrix operations

c) Rule-based operations

d) Logical operations

Answer: b) Matrix operations

124. What are some common tasks involved in finding the largest cells in a table?

a) Identifying patterns in data

b) Calculating probabilities

c) Extracting subsets of data

d) Performing statistical analysis

Answer: d) Performing statistical analysis

125. What are the functions used for statistical distributions in learning sets of rules?

a) Distribution functions

b) Rule-based functions

c) Mathematical functions

d) Common functions

Answer: a) Distribution functions