

Taken from §2.1 in the text.

1. The notation $y = f(x)$ is called _____ notation.
3. The notation $f(x) = x^2 + 1$ is a _____ representation of a function.
5. The set of valid inputs for a function is the _____.
7. A function computes _____ output for each valid input.
9. Name four types of representations for a function.

11. If $f(a) = b$, the point _____ is on the graph of f .
13. If a is in the domain of f , then $f(a)$ represents how many outputs?

For exercises 19 - 29 odd, evaluate $f(x)$ at the given values of x .

19. $f(x) = 4x - 2$ $x = -1, 0$

21. $f(x) = \sqrt{x}$ $x = -4, 2$

23. $f(x) = x^2$ $x = -5, \frac{3}{2}$

25. $f(x) = 3$ $x = -8, \frac{7}{3}$

27. $f(x) = 5 - x^3$

$x = -2, 3$

29. $f(x) = \frac{2}{x+1}$

$x = -5, 4$

31. Function I computes the number of inches in x yards.

a) Write a formula for the function described.

b) Evaluate the function for input 10 and interpret the results.

33. Function A computes the area of a circle with radius r .

a) Write a formula for the function described.

b) Evaluate the function for input 10 and interpret the results.

For exercise 39, write the function f as a set of ordered pairs. Give the domain and range of f .

$$39. f(a) = b, f(c) = d, f(e) = a, f(d) = b$$

For exercises 51 - 57 odd, use the graph or table from the book on page 87 to evaluate the given expressions.

$$51. f(0) = \qquad f(2) =$$

$$53. f(-2) = \qquad f(1) =$$

$$55. f(1) = \qquad f(2) =$$

$$57. f(0) = \qquad f(2) =$$

59. The function f described in the figure on page 88 computes average fuel efficiency of new U.S. passenger cars in miles per gallon during year x . Use the figure on page 88 to evaluate $f(1990)$. Interpret your answer using a complete sentence.

For exercises 61 and 63, express the verbal representation for the function f numerically, symbolically, and graphically. Let $x = -3, -2, -1, \dots, 3$ for the numerical representation (table), and let $-3 \leq x \leq 3$ for the graph.

61. Add 5 to the input x to obtain the output y .

63. Multiply the input x by 5 and then subtract 2 to obtain the output y .

71. Give a verbal representation of $f(x) = \frac{x}{3}$.

75. In 2005, the average cost of driving a new car in the United States was about 50 cents per mile. Symbollically, graphically, and numerically represent a function f that computes the cost in dollars of driving x miles. For the numerical representation (table) let $x = 10, 20, 30, \dots, 70$.

77. The average price P of a single-family home in thousands of dollars from 1990 to 2000 can be approximated by $P(x) = 5.7(x - 1990) + 150$ where x is the year. Evaluate $P(1995)$ and interpret the result.

For exercises 79 - 87, use the graph or diagram in the text on page 88 or 89 to estimate the domain and range of the expressed function. Use proper set notation.

79. Domain = Range =

81. Domain = Range =

83. Domain = Range =

85. Domain = Range =

87. Domain = Range =

For exercises 89 - 101 odd, determine the domain of the given function.

89. $f(x) = 10x$

91. $f(x) = x^2 - 3$

93. $f(x) = \frac{3}{x-5}$

95. $f(x) = \frac{2x}{x^2+1}$

97. $f(x) = \sqrt{x-1}$

99. $f(x) = |x - 5|$

101. $f(x) = \frac{1}{x}$

In exercises 105 and 107, determine if the diagram on page 89 represents a function.

105.

107.

109. The table lists the monthly average precipitation P in Las Vegas, Nevada, where $x = 1$ corresponds to January and $x = 12$ corresponds to December.

x (month)	1	2	3	4	5	6	7	8	9	10	11	12
P (inches)	0.5	0.4	0.4	0.2	0.2	0.1	0.4	0.5	0.3	0.2	0.4	0.3

a) Determine the value of P during May.

b) Is P a function of x ? Explain.

c) If $P = 0.4$, find the x values which correspond to this and interpret your findings.

For exercises 111 - 123 odd, determine whether the graph, set of points or table from the book on pages 90 and 91 represent functions. If it does, identify the domain and range using proper set notation.

111.

113.

115.

117.

119.

121.

123.