

Be able to work items of the following types.

SHORT ANSWER. Write the word or phrase that best completes each statement or answers the question.

Select from the list of numbers all that belong to the specified sets.

1. Natural numbers and Rational numbers

$$15, \sqrt{7}, -13, 0, \frac{0}{4}, \sqrt{4}$$

2. Integer numbers and Irrational numbers

$$10, \sqrt{7}, -3, 0, \frac{0}{9}, \sqrt{9}, \frac{-8}{0}, 0.72$$

Write the number in scientific notation.

3. 1,900,000

4. 0.0000006

Write the number in standard form.

5. 5.770×10^6

6. 2.295×10^{-6}

Find the percent change if a quantity changes from P_1 to P_2 . Round your answer to the nearest tenth if appropriate.

7. $P_1 = \$17, P_2 = \43

8. $P_1 = 3.8, P_2 = 2.9$

Use the information given in the table to solve the problem.

9. The table gives the Consumer Price Index for selected years.

Year	1960	1965	1970	1975	1980
CPI	30	35.8	48.8	63.6	82.4

What is the percent change (to the nearest tenth of a percent) in prices from 1965 to 1980?

Solve the problem.

10. An oil spill of 4399 cubic centimeters is spilled onto a pond and spreads out in a circular shape having a diameter of 536 centimeters. Approximate the thickness of the oil film to four decimal places.

Use the information given in the table to solve the problem.

11. The table gives the value of a 1957 Chevy BelAire in #2 condition for selected years.

Year	1980	1982	1984	1986	1988
Value in dollars	8140	8466	9892	10,587	11,959

Use the concept of an average or mean to estimate the value of a 1957 Chevy BelAire in #2 condition in 1985.

Find the mean of the set of data. Round to the nearest tenth.

12. 109, 48, 10, 64, 87, 53, 71, 105, 3

Find the median of the set of data.

13. 9, 2, 29, 16, 27, 42, 37, 35

Find the distance in the xy -plane between the two points. Round an approximate result to the nearest hundredth.

14. (8, 7) and (18, 31)

15. (-3, 1) and (-11, -5)

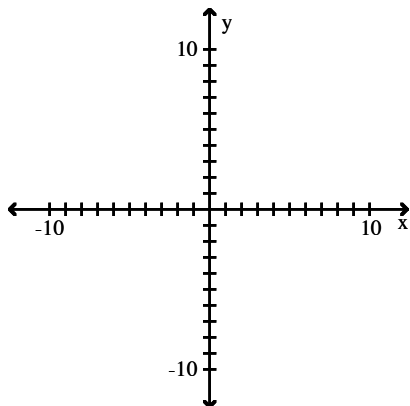
Find the midpoint of the line segment joining the two points.

16. (1, 3) and (3, 4)

17. (7, -2) and (-8, 6)

Make a scatterplot of the data.

18. $\{(5, -8), (-3, -1), (-5, 2), (-4, -4), (5, 3), (1, 1), (-3, -9), (7, 1), (-4, -5), (-1, -5)\}$



Evaluate the function as indicated.

19. Find $f(4)$ when $f(x) = x^2 - 5x - 1$.

20. Find $f(6)$ when $f(x) = \sqrt{3x + 9}$.

Specify the domain of the function.

21. $f(x) = 4x^2 + 9x - 7$

22. $f(x) = \sqrt{9 - x}$

23. $f(x) = \frac{x}{x - 9}$

Use the table to solve the problem.

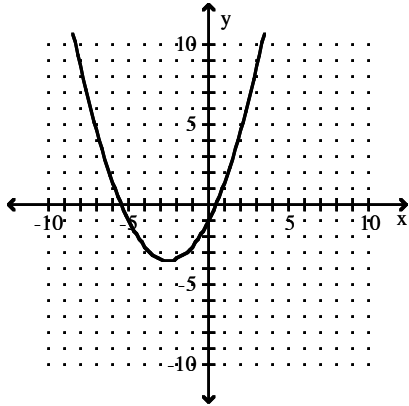
24. For a function f , we have the following numerical representation.

x	-2	-1	0	1	2
$f(x)$	20	5	0	5	20

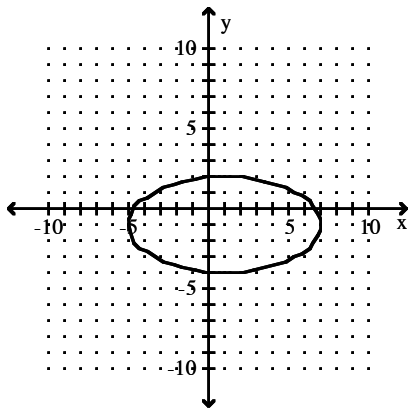
Evaluate f for $x = 2$.

Determine if the relation is a function.

25.



26.



For the given function expressed verbally, give a symbolic representation.

27. Bob buys a car that gets 12 miles per gallon of gasoline. Give a representation to compute the number of miles, y , that Bob can travel with x gallons of gasoline. Let $y = f(x)$.

Solve the problem.

28. Assume the function f computes the number y in millions of people using the internet in year x .

$$f = \{(1996, 1.2), (1998, 4.3), (2000, 9.8)\}$$

Evaluate $f(1998)$ and give the domain and range of f

Find the slope of the line that goes through the pair of points.

29. $(6, -7)$ and $(-1, 7)$

30. $(4, -8)$ and $(9, 7)$

31. (6, -5) and (6, 9)

32. (1, 9) and (-3, 9)

State the slope of the graph of f.

33. $f(x) = \frac{11}{12}x - 5$

34. $f(x) = 4x + 13$

Solve the problem.

35. The decline in the value of a stock can be estimated by the function $f(x) = -0.56x + 1189.4$, where x is the year with $1990 \leq x \leq 2000$. What is the slope of the graph of f ?

Determine if the data in the table are linear or nonlinear.

36.

x	8	9	10	11	12	13
y	19	21	23	25	27	29

37.

x	4	5	6	7	8
y	18	27	38	51	66

State whether the given function is linear and constant, linear but not constant, or nonlinear.

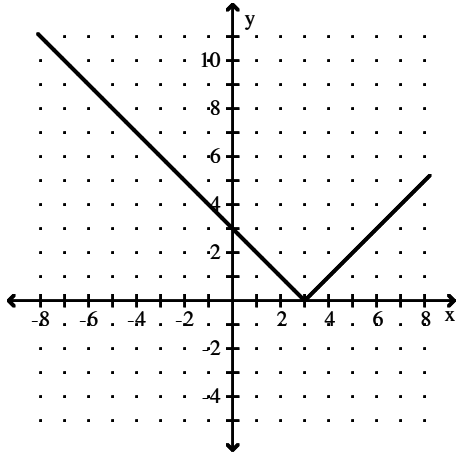
38. $f(x) = -6x + 3$

39. $f(x) = -6x^3 - 9x + 14$

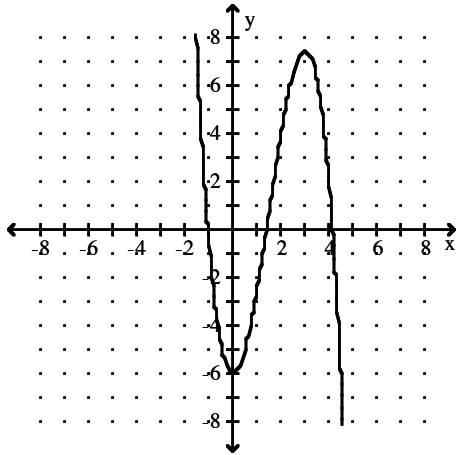
40. $f(x) = 6$

Use the graph of f to determine the intervals where f is increasing and where f is decreasing.

41.



42.



Identify where f is increasing or where f is decreasing, as indicated. Round your answer to two decimal places when appropriate.

43. $f(x) = -6x^2 + 24x$; increasing

44. $f(x) = -6x^2 + 12x + 3$; decreasing

Compute the average rate of change of f from x_1 to x_2 . Round your answer to two decimal places when appropriate. Interpret your result graphically.

45. $f(x) = 5x + 5$, $x_1 = -4$ and $x_2 = -1$

46. $f(x) = x^3 - 3x$, $x_1 = 2$ and $x_2 = 4$

Solve the problem.

47. The following table gives the outside temperature in degrees Fahrenheit on a winter day in Death Valley, California.

Time	7:00 am	8:00 am	9:00 am	10:00 am	11:00 am
Temperature ($^{\circ}$ F)	72	76	79	85	89

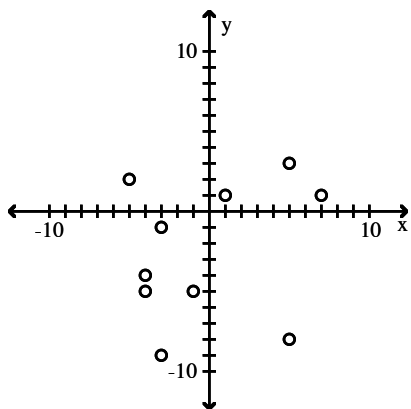
Calculate the average rate of change in temperature between 8:00 am and 11:00 am. Round your answer to two decimal places when appropriate.

48. The distance D in feet that an object has fallen after t seconds is given by $D(t) = 16t^2$.
- (i) Evaluate $D(2)$ and $D(3)$.
 - (ii) Calculate the average rate of change of D from 2 to 3. Interpret the result.

Answer Key

Testname: 1710 UNIT 2 REV 2014 SP

1. 15, $\sqrt{4}$
2. 10, -3, 0, $\frac{0}{9}$, $\sqrt{9}$, 0.72
3. 1.9×10^6
4. 6×10^{-7}
5. 5,770,000
6. 0.000002295
7. 152.9
8. -23.7
9. 130.2 %
10. 0.0195 cm
11. \$ 10,239.50
12. 61.1
13. 28
14. 26
15. 10
16. $\left(2, \frac{7}{2}\right)$
17. $\left(-\frac{1}{2}, 2\right)$
- 18.



19. -5
20. $\sqrt{27}$
21. All real numbers
22. $x \leq 9$
23. $x \neq 9$
24. 20
25. Function
26. Not a function
27. $f(x) = 12x$
28. $f(1998) = 4.3$; D: {1996, 1998, 2000}, R: {1.2, 4.3, 9.8}
29. -2
30. 3
31. Undefined
32. 0

Answer Key

Testname: 1710 UNIT 2 REV 2014 SP

33. $\frac{11}{12}$
34. 4
35. -0.56
36. linear
37. nonlinear
38. linear, but not constant
39. nonlinear
40. linear, constant
41. increasing: $[3, \infty)$; decreasing $(-\infty, 3]$
42. increasing: $[0, 3]$; decreasing: $(-\infty, 0] \cup [3, \infty)$
43. $(-\infty, 2]$
44. $[1, \infty)$
45. 5; the slope of the line passing through $(-4, f(-4))$ and $(-1, f(-1))$ is 5.
46. 25; the slope of the line passing through $(2, f(2))$ and $(4, f(4))$ is 25.
47. 4.33°F
48. (i) 64, 144
(ii) 80; the object's average speed from 2 to 3 seconds is 80 ft/sec.