Final Exam Review MATH 1101 Spring 2017

Name: _____

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

1) Rational numbers 1) _____

$7, \sqrt{7}, -21, 0, \frac{0}{7}, \sqrt{9}, \frac{-2}{0}, 0.3$

A) $\sqrt{7}, \frac{0}{7}, 0.3$ B) $\sqrt{7}, \sqrt{9}$

C) $7, 0, \sqrt{9}$ D) $7, -21, 0, \frac{0}{7}, \sqrt{9}, 0.3$

2) Irrational numbers 2) _____

$5, \sqrt{7}, -23, 0, \frac{0}{8}, \sqrt{9}, \frac{-6}{0}, 0.51$

A) $\sqrt{7}, \sqrt{9}, 0.51$ B) $\sqrt{7}, \sqrt{9}$ C) $\sqrt{7}$ D) $\sqrt{7}, \frac{-6}{0}$

Write the number in scientific notation.

3) 4,200,000 3) _____

A) 4.2×10^5 B) 4.2×10^6 C) 4.2×10^{-6} D) 4.2×10^{-5}

4) 0.000977 4) _____

A) 9.77×10^4 B) 9.77×10^{-4} C) 9.77×10^{-5} D) 9.77×10^{-3}

Use a calculator to approximate the expression. Write your answer in scientific notation, and round to the nearest tenth as needed.

5) $(2.2 \times 10^5)(1.6 \times 10^7)$ 5) _____

A) 35×10^{12} B) 3.5×10^{35} C) 35×10^{35} D) 3.5×10^{12}

6) $\frac{5.5 \times 10^6}{0.0096}$ 6) _____

A) 6.1×10^8 B) 5.7×10^8 C) 5.7×10^6 D) 5.3×10^6

Find the domain and range of the relation.

7) {(-1,9), (5,-5), (-6,-9), (2,-3), (-8,-7)} 7) _____

A) D = {-7, -5, -9, -3, 9}; R = {-8, 5, -6, 2, -1}
B) D = {-8, 5, -6, 2, -1}; R = {-7, -5, -9, -3, 9}
C) D = {-9, 2, -3, -1, 9}; R = {-8, -7, 5, -5, -6}
D) D = {-8, -7, 5, -5, -6}; R = {-9, 2, -3, -1, 9}

Determine if the relation is a function.

8) S={(-5, -20), (-4, -18), (-10, 0), (-6, -20), (5, -23)} 8) _____

A) Function B) Not a Function

9) S={(-20, 6), (-19, 8), (-40, 0), (-21, 6), (-20, 3)} 9) _____

A) Not a Function B) Function

Find the median of the set of data.

10) 7, 9, 15, 24, 41, 45, 46 10) _____

A) 41 B) 15 C) 27 D) 24

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

11) 86, 41, 18, 48, 85, 57, 53, 82, 15 11) _____

A) 53.9 B) 44.4 C) 52.2 D) 60.6

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

12) (7, 5) and (1, 4) 12) _____

A) $(8, 9)$ B) $\left(4, \frac{9}{2}\right)$ C) $(6, 1)$ D) $\left(3, \frac{1}{2}\right)$

Evaluate the function as indicated.

13) Find f(3) when $f(x) = \frac{x - 6}{x + 4}$. 13) _____

A) $-\frac{3}{7}$ B) $\frac{9}{7}$ C) $\frac{3}{7}$ D) 3

Specify the domain of the function.

14) $f(x) = \frac{x}{x - 6}$ 14) _____

A) $x \neq 6$ B) $x > 0$

C) All real numbers D) $x \neq -6$

15) $f(x) = \sqrt{14 - x}$ 15) _____

A) All real numbers B) $x > \sqrt{14}$

C) $x \neq 14$ D) $x \leq 14$

Evaluate the function as indicated.

16) Find f(t - 2) when $f(x) = \sqrt{3x + 2}$. 16) _____

A) $\sqrt{3t - 4}$ B) $\sqrt{3t + 2}$ C) $\sqrt{3t + 8}$ D) $\sqrt{-2t - 4}$

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

17) $f(x) = -4x + 6$ 17) _____

A) none of these B) linear, but not constant

C) linear, constant D) nonlinear

18) $f(x) = -5x^3 - 5x + 10$ 18) _____

A) nonlinear B) linear, but not constant

C) linear, constant D) none of these

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

19) $f(x) = \sqrt{2x + 1}$, $x_1 = 1$ and $x_2 = 3$ 19) _____

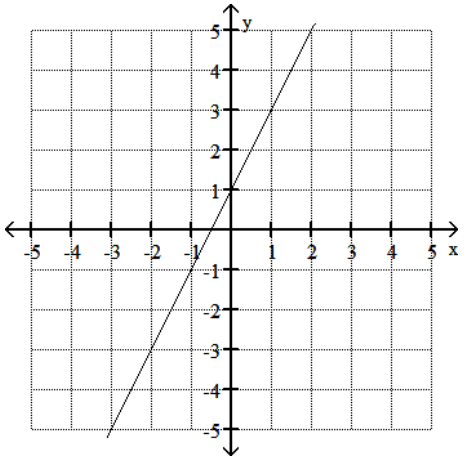
A) -0.46 B) 0.46 C) 0.62 D) -0.62.

20) $f(x) = x^3 - 4x$, $x_1 = 2$ and $x_2 = 4$ 20) _____

A) -8 B) -24 C) 8 D) 24

Identify the slope, y-intercept, and x-intercept.

21) 21) _____

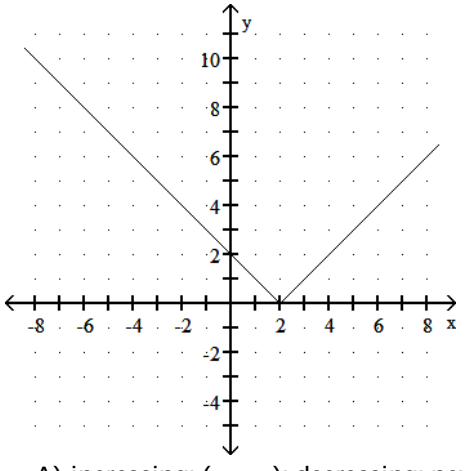


A) Slope: 3; y-intercept: 1; x-intercept: $-\frac{1}{2}$ B) Slope: -2; y-intercept: $-\frac{1}{2}$; x-intercept: 1

C) Slope: 2; y-intercept: $-\frac{1}{2}$; x-intercept: 1 D) Slope: 2; y-intercept: 1; x-intercept: $-\frac{1}{2}$

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

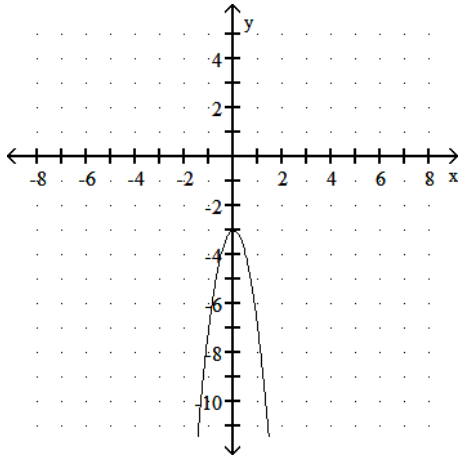
22) 22) _____



A) increasing: $(-\infty, \infty)$; decreasing: never B) increasing: $(-\infty, 0)$; decreasing $(0, \infty)$

C) increasing: $(2, \infty)$; decreasing $(-\infty, 2)$ D) increasing: $(-\infty, 2)$; decreasing $(2, \infty)$

23) 23) _____



A) increasing: $(-\infty, 0)$; decreasing $(0, \infty)$
B) increasing: never; decreasing: $(-\infty, \infty)$
C) increasing: $(-\infty, \infty)$; decreasing: never
D) increasing: $(0, \infty)$; decreasing $(-\infty, 0)$

Find a point-slope form for the equation of the line satisfying the conditions.

24) Slope -5, passing through (6, 3) 24) _____

A) $y - 3 = 5x - 6$
B) $y - 3 = -5x + 6$
C) $y = -5(x - 6) - 3$
D) $y = -5(x - 6) + 3$

Write the slope-intercept form of the equation for the line passing through the given pair of points.

25) (-8, 7) and (0, 2) 25) _____

A) $y = -\frac{5}{8}x + 2$
B) $y = \frac{15}{2}x + 2$
C) $y = -\frac{15}{2}x + 2$
D) $y = \frac{5}{8}x + 2$

Write an equation of the line through the given point with the given slope. Write the equation in slope-intercept form.

26) (3, 3); slope: -6 26) _____

A) $y = -6x - 21$
B) $y = -6x + 21$
C) $y = -6x + \frac{1}{21}$
D) $y = -\frac{1}{6}x + 21$

Find an equation of the line satisfying the following conditions.
If possible, write the equation in slope-intercept form.

27) Through (4, -3), parallel to $-6x + 5y = -49$ 27) _____

A) $y = \frac{5}{6}x + \frac{1}{2}$
B) $y = -\frac{4}{5}x - \frac{49}{5}$
C) $y = -\frac{6}{5}x + \frac{39}{5}$
D) $y = \frac{6}{5}x - \frac{39}{5}$

28) Through (-9, -3), perpendicular to $7x - 2y = -69$ 28) _____

A) $y = \frac{2}{7}x - \frac{39}{7}$
B) $y = -\frac{2}{7}x - \frac{39}{7}$
C) $y = \frac{9}{2}x - \frac{69}{2}$
D) $y = -\frac{7}{2}x - \frac{7}{2}$

29) Vertical, passing through (9, -3) 29) _____

A) $y = -3$
B) $x = -3$
C) $x = 9$
D) $y = 9$

Solve the problem using your calculator.

30) Ten students in a graduate program were randomly selected. Their grade point averages (GPAs) when they entered the program were between 3.5 and 4.0. The following data were obtained regarding their GPAs on entering the program versus their current GPAs. Use linear regression to find a linear function that predicts a student's current GPA as a function of his or her entering GPA. 30) _____

Entering GPA	Current GPA
3.5	3.6
3.8	3.7
3.6	3.9
3.6	3.6
3.5	3.9
3.9	3.8
4.0	3.7
3.9	3.9
3.5	3.8
3.7	4.0

A) $y = 5.81 + 0.497x$
B) $y = 4.91 + 0.0212x$
C) $y = 2.51 + 0.329x$
D) $y = 3.67 + 0.0313x$

31) The paired data below consist of the test scores of 6 randomly selected students and the number of hours they studied for the test. Use linear regression to find a linear function that predicts a student's score as a function of the number of hours he or she studied. 31) _____

Hours	5	10	4	6	10	9
Score	64	86	69	86	59	87

A) $y = 33.7 - 2.14x$
B) $y = -67.3 + 1.07x$
C) $y = 67.3 + 1.07x$
D) $y = 33.7 + 2.14x$

Identify the equation as either linear or nonlinear by trying to write it in the form $ax + b = 0$.

32) $7x + 7 = 0.8$ 32) _____

A) Nonlinear
B) Linear

Solve the equation symbolically.

33) $23t + 6 = 7t + 12$ 33) _____

A) $\frac{3}{8}$
B) $\frac{5}{3}$
C) $-\frac{3}{8}$
D) $\frac{15}{7}$

34) $8x - (6x - 1) = 2$ 34) _____

A) $\frac{1}{2}$
B) $\frac{1}{14}$
C) $-\frac{1}{14}$
D) $-\frac{1}{2}$

Identify the equation as either linear or nonlinear by trying to write it in the form $ax + b = 0$.

35) $x^2 + 3x = x^3 + 6$ 35) _____

A) Linear
B) Nonlinear

Solve the equation symbolically.

36) $\frac{3x - 9}{5} + \frac{6x - 8}{4} = -1$ 36) _____

A) $-\frac{4}{7}$ B) $\frac{4}{3}$ C) $-\frac{16}{7}$ D) $\frac{25}{14}$

Classify the equation as a contradiction, an identity, or a conditional equation.

37) $15k - 48 = 5(3k - 10)$ 37) _____

A) Contradiction B) Conditional C) Identity

38) $4(4f - 9) = 16f - 36$ 38) _____

A) Identity B) Conditional C) Contradiction

Solve the linear equation with the intersection-of-graphs method. Approximate the solution to the nearest hundredth if necessary.

39) $\sqrt{11x} = 2x - 3.5$ 39) _____

A) 2.66 B) 0.66 C) -2.66 D) -0.66

Solve the inequality symbolically. Express the solution set in interval notation.

40) $4z - 9 > 3z - 4$ 40) _____

A) $(-13, \infty)$ B) $(5, \infty)$ C) $(-\infty, -13)$ D) $(-\infty, 5)$

41) $-7 \le 8 - 6x \le 9$ 41) _____

A) $[-\frac{1}{6}, \frac{5}{2}]$ B) $[\frac{5}{2}, -\frac{1}{6}]$ C) $(-\frac{1}{6}, \frac{5}{2})$ D) $(\frac{5}{2}, -\frac{1}{6})$

42) $-9 < 4x - 4 \le 10$ 42) _____

A) $[-\frac{5}{4}, \frac{7}{2})$ B) $(-\frac{5}{4}, \frac{7}{2}]$ C) $[\frac{7}{2}, -\frac{5}{4})$ D) $(\frac{7}{2}, -\frac{5}{4}]$

43) $-3 < 6x - 7 \le 10$ 43) _____

A) $(\frac{2}{3}, \frac{17}{6}]$ B) $[\frac{17}{6}, \frac{2}{3})$ C) $[\frac{2}{3}, \frac{17}{6})$ D) $(\frac{17}{6}, \frac{2}{3}]$

Solve the problem.

44) The cost for labor associated with fixing a washing machine is computed as follows: There is a fixed charge of $35 for the repairman to come to the house, to which a charge of $29 per hour is added. Find an equation that can be used to determine the labor cost, C(x), of a repair that takes x hours. 44) _____

A) C(x) = (35 + 29) x B) C(x) = 29 + 35x

C) C(x) = 35 + 29x D) C(x) = 35 - 29x

45) In a certain city, the cost of a taxi ride is computed as follows: There is a fixed charge of $2.25 as soon as you get in the taxi, to which a charge of $1.65 per mile is added. Find an equation that can be used to determine the cost, C(x), of an x-mile taxi ride, and use this equation to find the cost of a 8-mile taxi ride. 45) _____

A) $15.45 B) $16.35 C) $15.33 D) $15.63

Identify f as being linear, quadratic, or neither. If f is quadratic, identify the leading coefficient.

46) $f(x) = 3x^2 - 8$ 46) _____

A) Linear B) Quadratic; -8 C) Quadratic; 3 D) Neither

47) $f(x) = \frac{6}{2x^2 + 9}$ 47) _____

A) Linear B) Quadratic; 2 C) Quadratic; 6 D) Neither

Determine the vertex of the graph of f.

48) $f(x) = 2x^2 + 12x + 14$ 48) _____

A) (-4, -3) B) (4, 3) C) (3, 4) D) (-3, -4)

49) $f(x) = 4x^2 - 24x + 41$ 49) _____

A) (5, 3) B) (-3, -5) C) (3, 5) D) (-5, -3)

Write the equation as $f(x) = a(x - h)^2 + k$. Identify the vertex.

50) $f(x) = x^2 + 6x - 4$ 50) _____

A) $f(x) = (x + 6)^2 - 40$; (-40, -6) B) $f(x) = (x + 3)^2 - 13$; (-13, -3)

C) $f(x) = (x + 6)^2 - 40$; (-6, -40) D) $f(x) = (x + 3)^2 - 13$; (-3, -13)

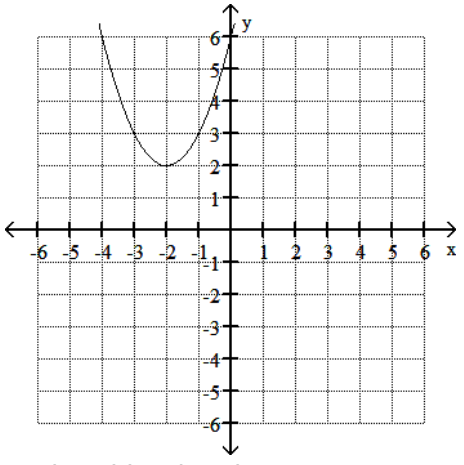
51) $f(x) = x^2 + 5x + 2$ 51) _____

A) $f(x) = (x + 5)^2 - 23$; (-5, 23) B) $f(x) = \left(x + \frac{5}{2}\right)^2 - \frac{17}{4}; \left(\frac{5}{2}, -\frac{17}{4}\right)$

C) $f(x) = \left(x + \frac{5}{2}\right)^2 - \frac{17}{4}; \left(-\frac{5}{2}, -\frac{17}{4}\right)$ D) $f(x) = (x + 5)^2 - 23$; (5, 23)

Use the graph of the quadratic function to determine the sign of the leading coefficient, the vertex, and the equation of the axis of symmetry.

52) 52) _____



A) Positive; (-2, 2); x = -2 B) Positive; (-2, 2); y = 2

C) Negative; (-2, 2); x = -2 D) Positive; (2, 2); x = 2

Solve the problem.

53) A ball is tossed upward. Its height after t seconds is given in the table. 53) _____

Time (seconds)	0.5	1	1.5	2	2.5
Height (feet)	26.5	39.5	44.5	41.5	30.5

Find a quadratic function to model the data. Use the model to determine when the ball reaches its maximum height, as well as the value of the maximum height.

A) The ball reaches a maximum height of 40 feet in 1.5 seconds.
B) The ball reaches a maximum height of 44.6 feet in 1.6 seconds.
C) The ball never reaches a maximum height.
D) The ball reaches a maximum height of 50 feet in 2.1 seconds.

Use regression to find a quadratic function that best fits the data. Give results to the nearest hundredth.

54)

x	2	6	8	15
f(x)	35	95	116	78

54) _____

A) $f(x) = -1.40x^2 + 27.15x - 14.44$
B) $f(x) = 5.66x^2 - 39.888x + 99.29$
C) $f(x) = 1.40x^2 + 27.15x + 14.44$
D) $f(x) = -0.03 + 3.78x - 6.74$

Identify the interval where f is increasing or decreasing, as indicated. Express your answer in interval notation.

55) $f(x) = (x - 5)^2 - 5$; decreasing 55) _____

A) $(-\infty, 5]$ B) $[0, 5]$ C) $[5, \infty)$ D) $[-5, 0]$

Solve the quadratic equation.

56) $x^2 - 3x - 10 = 0$ 56) _____

A) $-4, 10$ B) $2, -5$ C) $4, -10$ D) $-2, 5$

57) $x(x - 7) = 44$ 57) _____

A) $4, -11$ B) $-4, -11$ C) $-4, 11$ D) $4, 11$

58) $3x^2 + 10x + 4 = 0$ 58) _____

A) $\frac{-5 \pm \sqrt{37}}{3}$ B) $\frac{-10 \pm \sqrt{13}}{3}$ C) $\frac{-5 \pm \sqrt{13}}{6}$ D) $\frac{-5 \pm \sqrt{13}}{3}$

Use the discriminant to determine the number of real solutions.

59) $s^2 - 6s + 5 = 0$ 59) _____

A) Two real solutions B) One real solution C) No real solutions

60) $3y^2 = 4y - 7$ 60) _____

A) One real solution B) Two real solutions C) No real solutions

61) $4x^2 - 8x + 4 = 0$ 61) _____

A) Two real solutions B) One real solution C) No real solutions

Solve the problem.

62) A rock falls from a tower that is 256 feet high. As it is falling, its height is given by the formula $h = 256 - 16t^2$. How many seconds (in tenths) will it take for the rock to hit the ground (h = 0)? 62) _____

A) 16 sec B) 4 sec C) 15.5 sec D) 4096 sec

63) A ball is thrown downward from a window in a tall building. Its position at time t in seconds is $s = 16t^2 + 32t$, where s is in feet. How long (to the nearest tenth) will it take the ball to fall 181 feet? 63) _____

A) 3.4 sec B) 2.5 sec C) 6.3 sec D) 2.3 sec

If the following is a polynomial function, then state its degree and leading coefficient. If it is not, then state this fact.

64) $f(x) = 16x^7 - 4x - 6$ 64) _____

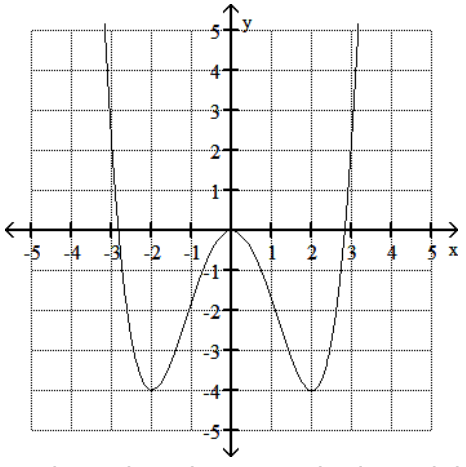
A) Degree: 16; leading coefficient: 7
B) Degree: 7; leading coefficient: 16
C) Not a polynomial function.
D) Degree: 8; leading coefficient: 16

65) $f(x) = -9x^4 + 7x^3 + 3x^2 + 9$ 65) _____

A) Degree: -9; leading coefficient: 3
B) Degree: 3; leading coefficient: -9
C) Not a polynomial function.
D) Degree: 4; leading coefficient: -9

Determine any local or absolute extrema as indicated.

66) Use the graph of f to estimate the local extrema. 66) _____



A) Local maximum: 0; Absolute minima: -2 and 2
B) Local maximum: 0; Absolute minimum: -4
C) No absolute maximum; Absolute minimum: -4
D) Local maximum: ∞; Absolute minima: -2 and 2

67) Estimate graphically the local extrema of $f(x) = 0.02x^5 - 0.04x^4 - 0.06x^3 + 1.46x^2 + 1$. 67) _____

A) Local maximum: 7.86; local minimum: 1
B) Local maximum: 9.20; local minimum: 1.06
C) Local maximum: -2.79; local minimum: 0
D) Local maximum: 8.65; local minimum 0.91

State the end behavior of the graph of f.

68) $f(x) = 4x - \frac{1}{2}x^3$ 68) _____

A) Down on both sides
B) Up on left side, down on right side
C) Down on left side, up on right side
D) Up on both sides

69) $f(x) = x^2 + 5x$ 69) _____

A) Up on both sides
B) Up on left side, down on right side
C) Down on both sides
D) Down on left side, up on right side

Approximate the coordinates of each turning point. Round to the nearest hundredth, if necessary.

70) $f(x) = -2x^2 + 8x - 4$ 70) _____

A) (2, 12) B) (-2, 4) C) (2, 4) D) (-2, 12)

71) $f(x) = x^4 - 4x^3 + 4x^2 - 4x + 1$ 71) _____

A) (2.32, -7.73) B) (0, 1)

C) (0.23, 0.25) and (2.73, -5.95) D) (2.73, -5.95)

Find either a linear or an exponential function that models the data in the table.

72)

x	-2	-1	0	1	2
y	6	5.5	5	4.5	4

72) _____

A) $f(x) = 0.5x + 5$ B) $f(x) = 5(0.5)^x$ C) $f(x) = 5(4.5)^x$ D) $f(x) = -0.5x + 5$

73)

x	0	1	2	3	4
y	5	20	80	320	1280

73) _____

A) $f(x) = \frac{1}{15}x + 5$ B) $f(x) = 5(4)^x$ C) $f(x) = 4(5)^x$ D) $f(x) = 15x + 5$

Use the compound interest formula to determine the final value of the given amount.

74) $1,000 at 5% compounded annually for 12 years 74) _____

A) $1710.34 B) $1885.65 C) $1795.86 D) $795.86

75) $480 at 12% compounded quarterly for 3 years 75) _____

A) $674.37 B) $664.43 C) $684.37 D) $204.37

76) $960 at 3% compounded continuously for 15 years 76) _____

A) $1505.58 B) $1172.55 C) $142,476.63 D) $40,820.24

Evaluate the expression.

77) $\log \sqrt[3]{0.1}$ 77) _____

A) -0.33 B) -3 C) -1 D) No solution

78) $\log 100 + \log 0.00001$ 78) _____

A) -3 B) 3 C) 7 D) -7

Solve the equation. Round to the nearest hundredth when appropriate.

79) $2^x = 957$ 79) _____

A) x = 9.90 B) x = 2.98 C) x = 478.5 D) x = 2.68

80) $e^x = 109$ 80) _____

A) x =4.27 B) x = 296.29 C) x = 4.69 D) x = 2.04

Solve the equation.

81) $\log_8 x = -4$ 81) _____

A) x = -32 B) x = - 65536 C) x = 0.000244 D) x = - 6

82) $6 \ln x - 6 = 7$ 82) _____

A) x = 73735.57 B) x = 0.77 C) x = 8.73 D) x = 0.43

Solve the equation symbolically.

83) $\log_2 x = 3$ 83) _____

A) x = 9 B) x = 8 C) x = 6 D) x = 1.89

Use the change of base formula to approximate the logarithm to four decimal places.

84) $\log_8 47.35$ 84) _____

A) 1.6753 B) 1.8551 C) 5.9188 D) 0.5391

85) $\log_{8.8} 2.3$ 85) _____

A) 0.3830 B) 0.2614 C) 0.3617 D) 2.6110

86) $\log_{\sqrt{4}} 293.2$ 86) _____

A) 4.0979 B) 8.1957 C) 0.3010 D) 0.1220

Use common or natural logarithms to solve the exponential equation .

87) $4^{(12 - 3x)} = 64$ 87) _____

A) x = -15 B) x = 12.33 C) x = -1 D) x = 3

88) $3^{(x - 1)} = 17$ 88) _____

A) x = -0.61 B) x =3.58 C) x = -3.58 D) x = 1.39

89) $5^x = \frac{1}{625}$ 89) _____

A) x = $-4^{™}$ B) x = 0.22 C) x = $™^{™}$ D) x = 4

Solve the logarithmic equation symbolically.

90) $6 \ln x = 7$ 90) _____

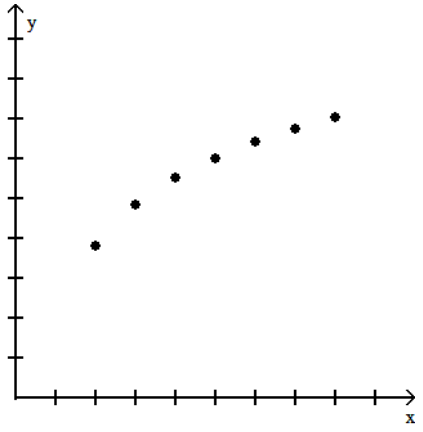
A) x =114.17 B) x = 2.71 C) x =182.77 D) x = 3.21

91) $230 + 6 \log x = 140$ 91) _____

A) x = -1.00×10^{15} B) x = 1.00×10^{-15} C) x = -150 D) No solution

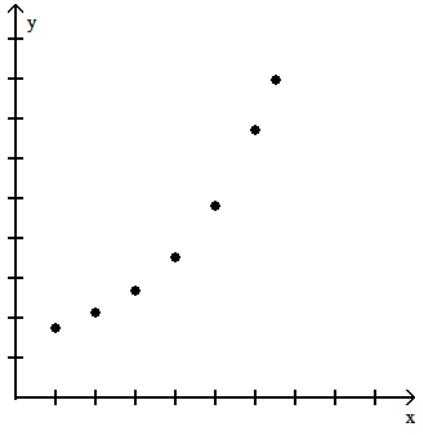
Select an appropriate type of modeling function for the data shown in the graph. Choose from exponential, logarithmic, and logistic.

92) 92) _____



A) Logarithmic B) Logistic C) Exponential

93) 93) _____



A) Logarithmic B) Exponential C) Logistic

Solve the problem.

94) The table contains data that can be modeled by an exponential function of the form $f(x) = ba^x$. Use regression to determine an exponential function f that models this data. Round the coefficients to the nearest hundredth. 94) _____

x	1	3	5	7
y	1.23	2.51	4.05	6.92

A) $f(x) = (0.85)(1.14)^x$ B) $f(x) = (0.98)(1.33)^x$

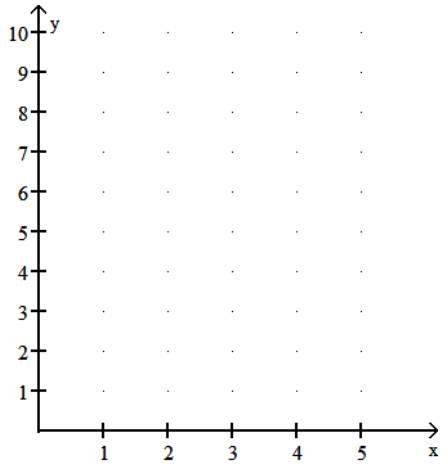
C) $f(x) = (1.14)(0.85)^x$ D) $f(x) = (1.33)(0.98)^x$

Make a scatterplot of the data. Then find an exponential, logarithmic, or logistic function f that best models the data. Round function values to the nearest hundredth.

95)

x	1	2	3	4	5
y	1.3	4.9	6.8	8.0	9.2

95) _____



A) Logarithmic: $f(x) = 1.29 + 5.19 \ln x$

B) Logistic: $f(x) = \dfrac{6.96}{1 + 500.14e^{-2.25x}}$

C) Logarithmic: $f(x) = 1.39 + 4.86 \ln x$

D) Logistic: $f(x) = \dfrac{8.94}{1 + 16.33e^{-1.38x}}$

Answer Key
Testname: FINAL EXAM REVIEW 2017

1) D
2) C
3) B
4) B
5) D
6) B
7) B
8) A
9) A
10) D
11) A
12) B
13) A
14) A
15) D
16) A
17) B
18) A
19) B
20) D
21) D
22) C
23) A
24) D
25) A
26) B
27) D
28) B
29) C
30) D
31) C
32) B
33) A
34) A
35) B
36) B
37) A
38) A
39) C
40) B
41) A
42) B
43) A
44) C
45) A
46) C
47) D
48) D
49) C
50) D

51) C
52) A
53) B
54) A
55) A
56) D
57) C
58) D
59) A
60) C
61) B
62) B
63) B
64) B
65) D
66) B
67) A
68) B
69) A
70) C
71) A
72) D
73) B
74) C
75) C
76) A
77) A
78) A
79) A
80) C
81) C
82) C
83) B
84) B
85) A
86) B
87) D
88) B
89) A
90) D
91) B
92) A
93) B
94) B
95) C