

# Math 1130 Final Exam Review

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

**Provide an appropriate response.**

1) Solve:  $\frac{x-4}{3} - \frac{x+2}{3} = \frac{x-27}{4}$  1) \_\_\_\_\_

2) Solve:  $(10 - 2x)(5 - x) = 50$  2) \_\_\_\_\_

3) Solve:  $\frac{6}{x^2 - 1} = \frac{3}{x + 1} + 1$  3) \_\_\_\_\_

4) Solve:  $2\sqrt{x} - 1 = \sqrt{2x + 7}$  4) \_\_\_\_\_

5) Solve:  $-[2(x - 1) - 7] \leq 9x - (3 - x)$  5) \_\_\_\_\_

6) Solve:  $\frac{t-1}{4} + 3 > \frac{t}{3}$  6) \_\_\_\_\_

7) Solve:  $0.2[5(x - 1) - 4] < 0.8(x + 1)$  7) \_\_\_\_\_

8) A manufacturer has 4000 units of product  $x$  in stock and is now selling it at \$10 per unit. Next month the unit price will increase by \$2. The manufacturer wants the total revenue received from the sale of the 4000 units to be no less than \$45,000. What is the maximum number of units that can be sold this month? 8) \_\_\_\_\_

9) A homeowner must decide whether to buy or rent a garden rototiller. If she rents the machine, the rental fee is \$25 per day, and the daily cost to use it is \$5 for gas. If she were to buy the machine, the purchase price is \$650, and the daily cost is \$7 for gas, oil, and maintenance. On which day of use would the rental costs become greater than the ownership costs? 9) \_\_\_\_\_

**MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.**

**Write the first five terms of the geometric sequence with the given first term  $a$  and common ratio  $r$ .**

10)  $a = 6; r = \frac{1}{3}$  10) \_\_\_\_\_

A) 6, 18, 54, 162, 486

B)  $6, \frac{19}{3}, \frac{20}{3}, 7, \frac{22}{3}$

C)  $6, 2, \frac{2}{3}, \frac{2}{9}, \frac{2}{27}$

D)  $2, \frac{2}{3}, \frac{2}{9}, \frac{2}{27}, \frac{2}{81}$

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

**Provide an appropriate response.**

11) Find the domain of the function:  $f(x) = \frac{\sqrt{x-1}}{x^2-9}$  11) \_\_\_\_\_

- 12) Find the domain of the function:  $f(q) = \sqrt{4 - 3q}$  12) \_\_\_\_\_
- 13) If  $f(x) = x^2 + 2x - 6$ , find  $\frac{f(x+h) - f(x)}{h}$ . 13) \_\_\_\_\_
- 14) 14) \_\_\_\_\_
- Given the function  $f(x) = \begin{cases} 2x, & \text{if } 0 < x < 1 \\ 1 - x, & \text{if } 1 \leq x < 2, \\ 0, & \text{if } 2 \leq x \leq 3 \end{cases}$
- find:
- (a) the domain  
 (b)  $f(1)$   
 (c)  $f(2)$   
 (d)  $f(3)$   
 (e)  $f(0.1)$
- 15) If  $f(x) = 2x^2 + 1$  and  $g(x) = x - 1$ , find  $(f \circ g)(x) - (g \circ f)(x)$  15) \_\_\_\_\_
- 16) If  $f(x) = 5 - x$  and  $g(x) = 2x^2 - 3x + 4$ , find: 16) \_\_\_\_\_
- (a)  $(f + g)(x)$   
 (b)  $(f - g)(x)$   
 (c)  $(f - g)(2)$   
 (d)  $(fg)(x)$   
 (e)  $(fg)(0)$   
 (f)  $\left(\frac{f}{g}\right)(x)$   
 (g)  $f(g(x))$   
 (h)  $g(f(x))$   
 (i)  $g(f(1))$
- 17) Find the inverse of the function:  $f(x) = 8x + 3$  17) \_\_\_\_\_
- 18) Find the inverse of the function:  $f(x) = (x - 3)^2$ , for  $x \geq 3$  18) \_\_\_\_\_
- 19) Determine the  $x$ - and  $y$ -intercepts of the graph of  $y = \frac{7 - 14x}{(x + 2)(x - 1)}$ . 19) \_\_\_\_\_
- 20) Determine the  $x$ - and  $y$ -intercepts of the graph of  $y = \frac{4}{x^2 - 3x + 2}$ . 20) \_\_\_\_\_
- 21) Determine the  $x$ - and  $y$ -intercepts of the graph of  $y = x^4 - 16$ . 21) \_\_\_\_\_
- 22) Sketch the graph of  $f(x) = \begin{cases} 3x + 1, & \text{if } 0 \leq x < 2 \\ 7 - x, & \text{if } x \geq 2 \end{cases}$ , and give the domain and range. 22) \_\_\_\_\_
- 23) Find a general linear equation of the line that passes through point  $(-6, 4)$  and has slope  $-2$ . 23) \_\_\_\_\_

- 24) Find a general linear equation of the line that passes through the points (4, -3) and (6, -7). 24) \_\_\_\_\_
- 25) Determine an equation of the vertical line that passes through the point (3, -6). 25) \_\_\_\_\_
- 26) Find an equation of the horizontal line that passes through the point (5, 6). 26) \_\_\_\_\_
- 27) Suppose that consumers will demand 800 units of a product when the price is \$10 per unit, and 1000 units when the price is \$8 per unit. Find the demand equation for the product assuming that price  $p$  and quantity  $q$  are linearly related. 27) \_\_\_\_\_
- 28) For the parabola  $y = f(x) = -x^2 + 7x - 6$ , find: (a) the vertex, (b) the  $y$ -intercept, and (c) the  $x$ -intercepts. 28) \_\_\_\_\_
- 29) The demand function for a manufacturer's product is  $p = f(q) = 600 - 2q$ , where  $p$  is the price (in dollars) per unit when  $q$  units are demanded (per week). Find the level of production that maximizes the manufacturer's total revenue and determine this revenue. 29) \_\_\_\_\_
- 30) Solve the following system algebraically:  $\begin{cases} 3x - 4y = 18 \\ 2x + 5y = -11 \end{cases}$  30) \_\_\_\_\_
- 31) Solve the following system algebraically:  $\begin{cases} \frac{1}{2}x - \frac{1}{4}y = \frac{1}{6} \\ x + \frac{1}{2}y = \frac{2}{3} \end{cases}$  31) \_\_\_\_\_
- 32) A retired couple has \$500,000 invested in two bond funds that earn 5% and 7%. If the total yearly income from the investments is \$30,000, how much is invested at each rate? 32) \_\_\_\_\_
- 33) A hobby store packages mixtures of different beads for sale. From wood beads, glass beads, and metal beads, the owner wants to prepare a mixture which will sell for \$4.20 for a 200 count bag. The cost per bead of these beads is \$0.01, \$0.03, and \$0.05, respectively. The number of wooden beads is to be four times the number of metal beads. How many of each type of bead will be in the final package? 33) \_\_\_\_\_
- 34) A manufacturer sells his product at \$12.50 per unit, selling all he produces. His fixed cost is \$5,000 and his variable cost per unit is \$8.50. (a) At what level of production will he break even? (b) At what level of production will he have a profit of \$10,000? 34) \_\_\_\_\_
- 35) Find the Point of Equilibrium for a product with Demand Equation and Supply Equation as follows: 35) \_\_\_\_\_
- Demand:  $p = 300 - 8q$
- Supply:  $p = \frac{19}{5}q + 5$

- 36) A certain medicine reduces the bacteria present by 25% each day. Currently 28,000 bacteria are present. Make a table of values for the number of bacteria present each day for 0 to 4 days. For each day write an expression for the number of bacteria as a product of 28,000 and a power of 0.75. Use the expressions to make an entry in your table for the number of bacteria after  $t$  days. write a function  $N$  for the number of bacteria after  $t$  days. 36) \_\_\_\_\_
- 37) The amount of plastic being recycled increases by 30% every year. Write a function for the factor of increase in plastic recycling as a function of years. Use a graphing calculator to graph your function. Use the graph to estimate when the amount of recycling will triple. 37) \_\_\_\_\_
- 38) Find  $x$ :  $\log_2 x = -3$  38) \_\_\_\_\_
- 39) Find  $x$ :  $\log_5 \frac{1}{25} = x$  39) \_\_\_\_\_
- 40) Find  $x$ :  $\log_x(4x - 3) = 2$  40) \_\_\_\_\_
- 41) Find  $x$  and express your answer in terms of natural logarithms:  $2e^{3x} = 6$  41) \_\_\_\_\_
- 42) A radioactive substance decays according to the equation  $N = 10e^{-0.04t}$ , where  $N$  is the number of milligrams present after  $t$  days. Find the half-life of the substance. 42) \_\_\_\_\_
- 43) Solve for  $x$ :  $\log(98 - x + x^2) = 2$  43) \_\_\_\_\_
- 44) Write the following in terms of  $\ln x$ ,  $\ln(x - 3)$ , and  $\ln(x + 1)$ :  $\ln \frac{x + 1}{x^2(x - 3)}$  44) \_\_\_\_\_
- 45) Write the following in terms of  $\ln x$ ,  $\ln(x - 3)$ , and  $\ln(x + 1)$ :  $\ln[x\sqrt[3]{(x - 3)(x + 1)^2}]$  45) \_\_\_\_\_
- 46) Find  $x$  and express your answer in terms of natural logarithms:  $2^{-x} - 3 = 8$  46) \_\_\_\_\_
- 47) Solve for  $x$ :  $\ln(x + 1) - \ln x = \ln 2$  47) \_\_\_\_\_
- 48) Solve for  $x$ :  $\log(x + 1) - \log(x - 2) = 1$  48) \_\_\_\_\_
- 49) Solve for  $x$ :  $(2 + x)^5 = 129.3$  49) \_\_\_\_\_
- 50) Solve for  $x$ :  $2^{\log_2 x} + \log_2 5 = 7$  50) \_\_\_\_\_
- 51) The value of an investment of \$1000 earning 8% compounded yearly is given by  $A = 1000(1.08)^t$ , where  $t$  is the number of years it has been invested. If the amount of your investment is now \$4000, how long has it been invested? 51) \_\_\_\_\_

- 52) How many years will it take for a principal to double at a rate of 10% compounded annually? Give your answer to the nearest year. 52) \_\_\_\_\_
- 53) At what nominal rate of interest, compounded semiannually, will an investment double in 20 years? 53) \_\_\_\_\_
- 54) An initial investment of \$10,000 grows at an annual rate of 3.5% compounded monthly. Find how long it takes for the investment to amount to \$14,400. 54) \_\_\_\_\_
- 55) Suppose an initial investment grows from \$2000 to \$2817.39 over three years. First find the nominal rate compounded monthly and then find the equivalent effective rate. 55) \_\_\_\_\_
- 56) An initial investment of \$300 grows at an annual rate of 4.5% compounded bimonthly. Find how long it takes for the investment to amount to \$450. 56) \_\_\_\_\_
- 57) A person has the option of satisfying a debt by either paying \$5000 now and \$5000 in two years, or by paying \$3000 now, \$3000 a year from now, and a final payment of  $x$  dollars two years from now. Determine an equation of value that corresponds to the value of all payments at the end of two years. It is not necessary to solve the equation. Assume that interest is at the rate of 10% compounded semiannually. 57) \_\_\_\_\_
- 58) For an initial investment of \$10,000, suppose a company guarantees the following cash flows at the end of the indicated years:
- | Year | Cash Flow |
|------|-----------|
| 1    | \$4000    |
| 3    | \$8000    |
- Assume an interest rate of 5% compounded annually. (a) Determine the net present value of the cash flows. (b) Is the investment profitable? 58) \_\_\_\_\_
- 59) Suppose that you can invest \$5000 in a business that guarantees you the following cash flows: \$3000 at the end of 2 years, \$2000 at the end of 4 years, and \$2000 at the end of 6 years. Assuming an interest rate of 6% compounded monthly, find the present value of the cash flows. Is the investment profitable? 59) \_\_\_\_\_
- 60) In five years a company will purchase equipment costing \$100,000. The company decides to place a single deposit into a savings account now so that its future value will equal the cost of the equipment. If the account earns interest at an annual rate of 10% compounded continuously, determine the deposit to the nearest dollar. 60) \_\_\_\_\_
- 61) A trust fund is to be set up by a single payment so that at the end of 10 years there will be \$1,000,000 in the fund. If interest is compounded continuously at an annual rate of 9%, to the nearest dollar, how much money should be paid into the fund initially? 61) \_\_\_\_\_
- 62) To purchase land for an industrial site, a company agrees to pay \$20,000 down and \$10,000 at the end of every six-month period for 10 years. If the interest rate is 10% compounded semiannually, what is the corresponding cash value of the land? 62) \_\_\_\_\_
- 63) A company repays a \$50,000 loan by paying 10% of the outstanding loan each month. Find the amount the company pays in the fourth and twentieth months. 63) \_\_\_\_\_

64) If \$12,000 is used to purchase an annuity consisting of equal payments at the end of every six months for the next 7 years and the interest rate is 6.2% compounded semiannually, find the amount of each payment. 64) \_\_\_\_\_

65) The premiums on an insurance policy are \$80 every six months, payable at the beginning of each six-month period. If the policy holder wishes to pay 1 year's premiums in advance, how much should be paid provided that the interest rate is 4.3% compounded semiannually? 65) \_\_\_\_\_

66) Suppose a truck costing \$36,000 is to be replaced at the end of 10 years, at which time it will have a resale value of \$12,000. In order to provide money at the time for a new truck costing \$40,000, a sinking fund is set up into which equal payments are placed at the end of every six months. If the fund earns 6% compounded semiannually, what should each payment be? 66) \_\_\_\_\_

67) A \$5000 loan is to be repaid over three years by equal payments due at the end of every quarter. If interest is at the rate of 20% compounded quarterly, determine (a) the quarterly payment and (b) the total interest paid. 67) \_\_\_\_\_

68) A debt of \$600 is to be repaid by two equal yearly payments with interest at the rate of 5% compounded annually. Complete the following amortization schedule for this debt. 68) \_\_\_\_\_

Period	Principal outstanding at beginning of period	Interest for period	Payment at end of period	Principal repaid at end of period
1				
2				
Totals	_____	_____	_____	_____

69) Mary amortizes a loan of \$80,000 for a new home by obtaining a 15-year mortgage at the rate of 9.9% compounded monthly. Find (a) the monthly payment, (b) the total interest charges, and (c) the principal remaining after 8 years. 69) \_\_\_\_\_

70) Cyndi bought a multimedia home computer system for \$4500 and agreed to pay off the loan by making monthly payments of \$109. If the store charges an interest rate of 9.7% compounded monthly, how many months will it take to pay off the debt? 70) \_\_\_\_\_

71) If  $A = \begin{bmatrix} 2 & 7 & 4 \\ 1 & 9 & 5 \\ 3 & 6 & 8 \end{bmatrix}$ , determine (a)  $a_{23}$ , and (b) the order of  $A$ . 71) \_\_\_\_\_

72) Find transpose of  $\begin{bmatrix} 9 & -2 & -7 \\ -5 & 5 & 3 \\ 4 & 6 & -3 \end{bmatrix}$ . 72) \_\_\_\_\_

73) Solve the matrix equation:  $x \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix} + 2 \begin{bmatrix} 3 \\ 5 \\ 1 \end{bmatrix} + y \begin{bmatrix} 0 \\ 3 \\ 0 \end{bmatrix} = \begin{bmatrix} 4 \\ 3 \\ x - y - 3 \end{bmatrix}$  73) \_\_\_\_\_

74) A pharmaceutical company manufactures 3 drugs for high blood pressure, A, B, and C, each of which requires a 2-step production process. The production cost of each drug has a materials and labor component. If the matrices  $S_1$  and  $S_2$  represent the costs per ounce associated with each step, use the matrix operations on a graphing calculator to write a matrix that shows the total cost of the two steps.

$$\begin{array}{l} \text{Materials} \\ \text{Labor} \end{array} S_1 = \begin{bmatrix} 2.00 & 1.50 & 1.80 \\ 1.25 & 1.75 & 1.50 \end{bmatrix}; S_2 = \begin{bmatrix} 1.50 & 1.25 & 2.00 \\ 2.50 & 1.75 & 1.00 \end{bmatrix}$$

74) \_\_\_\_\_

75) If  $A = \begin{bmatrix} -8 & 3 \\ 2 & 1 \\ 1 & -7 \end{bmatrix}$  and  $B = \begin{bmatrix} 5 & 2 \\ -2 & 9 \\ 4 & -3 \end{bmatrix}$ , find  $-4A + 5B$ .

75) \_\_\_\_\_

76)

Perform the indicated operation and simplify your answer:  $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 5 & 1 \\ -2 & 3 \end{bmatrix}$

76) \_\_\_\_\_

77)

Perform the indicated operation if possible:  $\begin{bmatrix} 4 \\ 8 \\ 0 \end{bmatrix} \begin{bmatrix} 2 & 6 & 5 \\ 4 & -1 & 3 \end{bmatrix}$

77) \_\_\_\_\_

78) Let  $A = \begin{bmatrix} 1 & 1 \\ 2 & -1 \end{bmatrix}$ ;  $B = \begin{bmatrix} 3 & -5 \\ -9 & 2 \end{bmatrix}$ ;  $C = \begin{bmatrix} -2 & 2 \\ 4 & -1 \end{bmatrix}$ . Find  $A[B + 2C]$

78) \_\_\_\_\_

79) An appliance store has 25 refrigerators, 30 ranges, and 10 dishwashers in stock, and a second store with 15 refrigerators, 25 ranges, and 20 dishwashers in stock. If the value of each refrigerator is \$600, each range is \$300 and each dishwasher is \$250, find the total value of the inventory at the two appliance stores.

79) \_\_\_\_\_

80) If  $A = \begin{bmatrix} 5 & -2 \\ -4 & 3 \\ 1 & 4 \end{bmatrix}$ ,  $B = \begin{bmatrix} 7 & 5 & 0 \\ -2 & 1 & 1 \\ 1 & -3 & -5 \end{bmatrix}$ , and  $C = \begin{bmatrix} 2 & -4 \\ 5 & 7 \\ -4 & 9 \end{bmatrix}$ , find  $BA - C$ .

80) \_\_\_\_\_

81)

Using the method of reduction, solve the system: 
$$\begin{cases} 2x - y - 4z = 0 \\ 4x + y - 2z = 0 \\ x - y - 3z = 0 \end{cases}$$

81) \_\_\_\_\_

82)

Using the method of reduction, solve the system: 
$$\begin{cases} 3x - 2y + z = -1 \\ 2x - y - z = 5 \\ 2x + 3z = 4 \end{cases}$$

82) \_\_\_\_\_

83) Find all solutions by reducing the matrix:

$$\begin{cases} x - y - 3z = 2 \\ x + y - z = 1 \\ 2x - y - 5z = \frac{7}{2} \end{cases}$$

83) \_\_\_\_\_

84)

Let  $\mathbf{A} = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 5 & 7 \\ -3 & -6 & -10 \end{bmatrix}$ . Find  $\mathbf{A}^{-1}$ .

84) \_\_\_\_\_

85) (a) If  $A$  is the coefficient matrix of the system  $\begin{cases} x + 2y + 3z = 1 \\ 2x + 5y + 7z = 9 \\ -3x - 6y - 10z = 8 \end{cases}$ , determine  $A^{-1}$ .

85) \_\_\_\_\_

(b) Use  $A^{-1}$  to solve the system.

86) Find the inverse matrix of  $\begin{bmatrix} 1 & 2 \\ -3 & 4 \end{bmatrix}$ .

86) \_\_\_\_\_

87) Find the inverse matrix of  $\begin{bmatrix} 1 & -2 & 0 \\ 2 & 1 & 2 \\ 0 & 0 & -1 \end{bmatrix}$ .

87) \_\_\_\_\_



## Answer Key

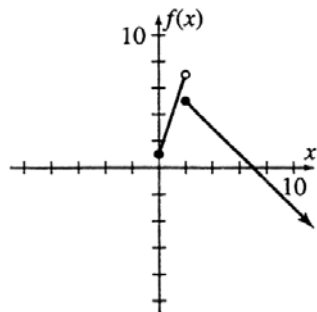
### Testname: MATH 1130 FINAL EXAM REVIEW

- 1)  $x = 19$
- 2)  $x = 0, 10$
- 3)  $x = -5, 2$
- 4)  $x = 9$
- 5)  $x \geq 1$
- 6)  $t < 33$
- 7)  $x < 13$
- 8) 1500
- 9) 29th day
- 10) C
- 11) all real numbers  $\geq 1$  except 3
- 12) all  $q \leq \frac{4}{3}$
- 13)  $2x + h + 2$
- 14) (a)  $0 < x \leq 3$ 
  - (b) 0
  - (c) 0
  - (d) 0
  - (e) 0.2
- 15)  $-4x + 3$
- 16) (a)  $2x^2 - 4x + 9$ 
  - (b)  $-2x^2 + 2x + 1$
  - (c) -3
  - (d)  $-2x^3 + 13x^2 - 19x + 20$
  - (e) 20
  - (f)  $\frac{5 - x}{2x^2 - 3x + 4}$
  - (g)  $1 - 2x^2 + 3x$
  - (h)  $2x^2 - 17x + 39$
  - (i) 24
- 17)  $f^{-1}(x) = \frac{1}{8}(x - 3)$
- 18)  $f^{-1}(x) = \sqrt{x} + 3$
- 19)  $\left(\frac{1}{2}, 0\right); \left(0, -\frac{7}{2}\right)$
- 20) no  $x$ -intercept; (0, 2)
- 21)  $(\pm 2, 0); (0, -16)$

Answer Key

Testname: MATH 1130 FINAL EXAM REVIEW

22)



Domain: all nonnegative reals

Range: all reals  $< 7$

23)  $2x + y + 8 = 0$

24)  $2x + y - 5 = 0$

25)  $x = 3$

26)  $y = 6$

27)  $p = -\frac{1}{100}q + 18$

28) (a)  $\left(\frac{7}{2}, \frac{25}{4}\right)$       (b)  $-6$       (c) 1 and 6

29) 150; \$45,000

30)  $x = 2, y = -3$

31)  $x = \frac{1}{2}, y = \frac{1}{3}$

32) \$250,000 at 5% and \$250,000 at 7%

33) 120 wooden beads; 50 glass beads; 30 of metal beads

34) (a) 1,250 units      (b) 3,750

35) Point of Equilibrium is: (25 units, \$100)

Days	Bacteria	Expression
0	28,000	$28,000(0.75)^0$
1	21,000	$28,000(0.75)^1$
36) 2	15,750	$28,000(0.75)^2$
3	11,812.5	$28,000(0.75)^3$
4	8859.4	$28,000(0.75)^4$
$t$		$28,000(0.75)^t$

Equation  $N(t) = 28,000(0.75)^t$

37)  $f(t) = 1.3^t$ ; about 4.2 years

38)  $\frac{1}{8}$

39)  $-2$

40) 1, 3

41)  $\frac{\ln 3}{3}$

42)  $\frac{\ln 2}{0.04} \approx \frac{0.69315}{0.04} \approx 17.33$  days

43)  $x = -1, 2$

# Answer Key

## Testname: MATH 1130 FINAL EXAM REVIEW

44)  $\ln(x + 1) - 2 \ln x - \ln(x - 3)$

45)  $\ln x + \frac{1}{3}[\ln(x - 3) + 2 \ln(x + 1)]$

46)  $-\frac{\ln 11}{\ln 2}$

47) 1

48)  $\frac{7}{3}$

49)  $x = .6443547$

50)  $x = \frac{7}{5} = 1.4$

51) a little over 18 years

52) 7

53) 3.5%

54)  $10\frac{1}{2}$  years

55) 11.4766%, 12.1%

56) 9 years

57)  $5000(1.05)^4 + 5000 = 3000(1.05)^4 + 3000(1.05)^2 + x$

58) (a) \$720.23 (b) yes

59) \$632.36; yes

60) \$60,653

61) \$406,570

62) \$144,622.10

63) \$3645, \$675.43

64) \$1069.57

65) \$158.32

66) \$1042.04

67) (a) \$564.13 (b) \$1769.56

68)

Period	Principal outstanding at beginning of period	Interest for period	Payment at end of period	Principal repaid at end of period
1	600.00	30.00	322.68	292.68
2	307.32	15.37	322.68	307.31
Totals		45.37	645.36	599.99

69) (a) \$854.80 (b) \$73,864 (c) \$51,650.92

70) 51 months

71) (a) 5 (b)  $3 \times 3$

72)  $\begin{bmatrix} 9 & -5 & 4 \\ -2 & 5 & 6 \\ -7 & 3 & -3 \end{bmatrix}$

73)  $x = -2, y = -1$

74)  $T = \begin{bmatrix} 3.50 & 2.75 & 3.80 \\ 3.75 & 3.50 & 2.50 \end{bmatrix}$

# Answer Key

## Testname: MATH 1130 FINAL EXAM REVIEW

$$75) \begin{bmatrix} -57 & -2 \\ -18 & 41 \\ 16 & 13 \end{bmatrix}$$

$$76) \begin{bmatrix} -4 & -1 \\ 9 & 15 \end{bmatrix}$$

77) not defined

$$78) \begin{bmatrix} -2 & -1 \\ -1 & -2 \end{bmatrix}$$

$$79) \begin{bmatrix} 600 & 300 & 250 \end{bmatrix} \begin{bmatrix} 25 & 15 \\ 30 & 25 \\ 10 & 20 \end{bmatrix} = \begin{bmatrix} 26,500 & 21,500 \end{bmatrix}$$

$$80) \begin{bmatrix} 13 & 5 \\ -18 & 4 \\ 16 & -40 \end{bmatrix}$$

$$81) x = z, y = -2z, z = t$$

$$82) x = 5, y = 7, z = -2$$

$$83) x = \frac{3}{2} + 2z; y = -\frac{1}{2} - z; z \text{ arbitrary}$$

$$84) \mathbf{A}^{-1} = \begin{bmatrix} 8 & -2 & 1 \\ 1 & 1 & 1 \\ -3 & 0 & -1 \end{bmatrix}$$

$$85) (a) A^{-1} = \begin{bmatrix} 8 & -2 & 1 \\ 1 & 1 & 1 \\ -3 & 0 & -1 \end{bmatrix},$$

$$(b) x = -2, y = 18, z = -11$$

$$86) \text{Inverse matrix is } \begin{bmatrix} \frac{2}{5} & -\frac{1}{5} \\ \frac{3}{10} & \frac{1}{10} \end{bmatrix}.$$

$$87) \text{Inverse matrix is } \begin{bmatrix} \frac{1}{5} & \frac{2}{5} & \frac{4}{5} \\ -\frac{2}{5} & \frac{1}{5} & \frac{2}{5} \\ 0 & 0 & -1 \end{bmatrix}.$$