1. –/5 pointsBerrFinMath1 4.1.001.

Sketch the system of inequalities.

$$\begin{cases} x + 2y \le 20 \\ x \ge 0,\ y \ge 0 \end{cases}$$

List all vertices. (Order your answers from smallest to largest x, then from smallest to largest y.)

$(x, y) =$ (

)

$(x, y) =$ (

)

$(x, y) =$ (

)

Identify the region as "bounded" or "unbounded."

- bounded
- unbounded

Need Help? Read It | Watch It | Talk to a Tutor

Show My Work (Optional)

2. -/6 pointsBerrFinMath1 4.1.002.

Sketch the system of inequalities.

$$\begin{cases} -2x + y \le 12 \\ x \le 10 \\ x \ge 0,\ y \ge 0 \end{cases}$$

List all vertices. (Order your answers from smallest to largest x, then from smallest to largest y.)

$(x, y) =$ (

)

$(x, y) =$ (

)

$(x, y) =$ (

)

$(x, y) =$ (

)

Identify the region as "bounded" or "unbounded."

- ○ bounded
- ○ unbounded

Need Help? Read It Talk to a Tutor

Show My Work (Optional)

3. –/6 pointsBerrFinMath1 4.1.003.

Sketch the system of inequalities.

$$\begin{cases} x + 2y \le 8 \\ x + y \le 7 \\ x \ge 0,\ y \ge 0 \end{cases}$$

List all vertices. (Order your answers from smallest to largest x, then from smallest to largest y.)

$(x, y) =$ ( )

$(x, y) =$ ( )

$(x, y) =$ ( )

$(x, y) =$ ( )

Identify the region as "bounded" or "unbounded."

- bounded
- unbounded

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Show My Work (Optional)

4. -/4 pointsBerrFinMath1 4.1.005.

Sketch the system of inequalities. List all vertices and identify the region as "bounded" or "unbounded."

$$\begin{cases} 4x + 3y \geq 24 \\ y \geq 4 \\ x \geq 0 \end{cases}$$

List all vertices. (Order your answers from smallest to largest x, then from smallest to largest y.)

$(x, y) =$ (

)

$(x, y) =$ (

)

Identify the region as "bounded" or "unbounded."

- bounded
- unbounded

Need Help? Read It Talk to a Tutor

Show My Work (Optional)

5. -/7 pointsBerrFinMath1 4.1.007.

Formulate the situation as a system of inequalities. (Let x represent the number of goats the farmer can raise and y represent the number of llamas.)

A rancher raises goats and llamas on his 400-acre ranch. Each goat needs 2 acres of land and requires \$60 of veterinary care per year, while each llama needs 5 acres of land and requires \$48 of veterinary care per year. If the rancher can afford no more than \$7,920 for veterinary care this year, how many of each animal can he raise?

(land requirements)

(veterinary care)

$x \geq 0, y \geq 0$

Sketch the feasible region.

Find the vertices. (Order your answers from smallest to largest x, then from smallest to largest y.)

$(x, y) =$ (

)

$(x, y) =$ (

)

$(x, y) =$ (

)

$(x, y) = ($ [ ])

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Show My Work (Optional)

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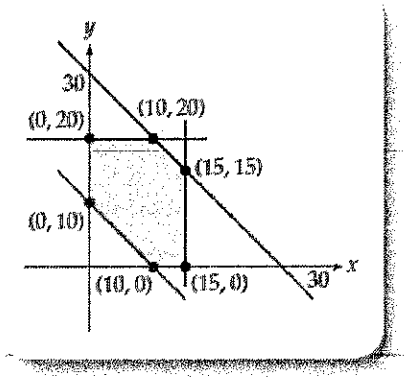
6. -/1 pointsBerrFinMath1 4.2.001.

Use the region below to find the maximum value. (If such a value does not exist, enter DNE.)

Maximum of $P = 6x + 4y$

$P =$ [ ]



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Show My Work (Optional)

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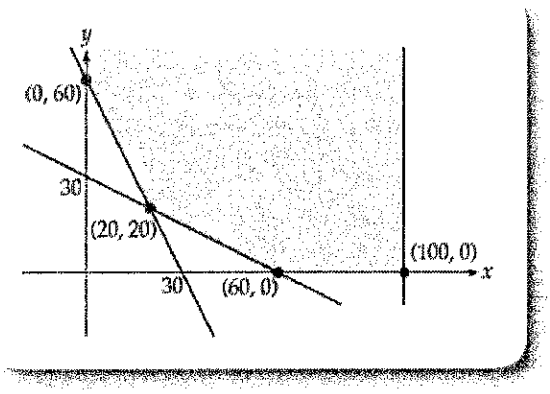
7. -/1 pointsBerrFinMath1 4.2.003.

Use the region below to find the minimum value. (If such a value does not exist, enter DNE.)

Minimum of $C = 3x + y$

$C =$ [ ]



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Show My Work (Optional)

8. -/1 pointsBerrFinMath1 4.2.005.

Solve the linear programming problem by sketching the region and labeling the vertices, deciding whether a solution exists, and then finding it if it does exist. (If an answer does not exist, enter DNE.)

Maximize $P = 20x + 50y$

Subject to $\begin{cases} 2x + y \le 16 \\ x + y \le 10 \\ x \ge 0,\ y \ge 0 \end{cases}$

$P =$ [ ]

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Show My Work (Optional)

9. -/1 pointsBerrFinMath1 4.2.006.

Solve the linear programming problem by sketching the region and labeling the vertices, deciding whether a solution exists, and then finding it if it does exist. (If an answer does not exist, enter DNE.)

Minimize $C = 10x + 50y$

Subject to $\begin{cases} 2x + 5y \ge 20 \\ x \ge 0,\ y \ge 0 \end{cases}$

$C =$ [ ]

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Show My Work (Optional)

10. -/1 pointsBerrFinMath1 4.2.008.

Solve the linear programming problem by sketching the region and labeling the vertices, deciding whether a solution exists, and then finding it if it does exist. (If an answer does not exist, enter DNE.)

Maximize $P = 5x + 3y$

Subject to $\begin{cases} 2x + y \le 90 \\ x + y \le 50 \\ x + 2y \le 90 \\ x \ge 0,\ y \ge 0 \end{cases}$

$P =$ [ ]

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Show My Work (Optional)

11. -/3 pointsBerrFinMath1 4.2.009.

Formulate the situation as a linear programming problem by identifying the variables, the objective function, and the constraints. Be sure to state clearly the meaning of each variable. Determine whether a solution exists, and if it does, find it. State your final answer in terms of the original question.

A rancher raises goats and llamas on his 400-acre ranch. Each goat needs 2 acres of land and requires $100 of veterinary care per year, and each llama needs 5 acres of land and requires $80 of veterinary care per year. The rancher can afford no more than $13,200 for veterinary care this year. If the expected profit is $78 for each goat and $117 for each llama, how many of each animal should he raise to obtain the greatest possible profit?

The rancher should raise [ ] goats and [ ] llamas for a maximum profit of $ [ ].

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Show My Work (Optional)

1. -/1 pointsBerrFinMath1 2.1.001.

Find the simple interest on the loan.

$1300 at 6% for 10 years.

$ [ ]

Show My Work (Optional)

2. -/1 pointsBerrFinMath1 2.1.003.

Find the total amount due for the simple interest loan.

$1200 at 7% for 10 years.

$ [ ]

Show My Work (Optional)

3. -/2 pointsBerrFinMath1 2.2.001.

Determine the amount due on the compound interest loan. (Round your answers to the nearest cent.)

$19,000 at 5% for 15 years if the interest is compounded in the following ways.

(a) annually

$ [ ]

(b) quarterly

$ [ ]

Show My Work (Optional)

4. -/1 pointsBerrFinMath1 2.2.005.

Find the term of the compound interest loan. (Round your answer to two decimal places.)

4.9% compounded quarterly to obtain $8200 from a principal of $2000.

[ ] yr

Show My Work (Optional)

5. -/2 pointsBerrFinMath1 2.2.007.

Use the "rule of 72" to estimate the doubling time (in years) for the interest rate, and then calculate it exactly. (Round your answers to two decimal places.)

9% compounded annually.

"rule of 72" [ ] yr

exact answer [ ] yr

Show My Work (Optional)

6. -/1 pointsBerrFinMath1 2.2.009.

Find the effective rate of the compound interest rate or investment. (Round your answer to two decimal places.)

13% compounded monthly. [*Note*: This rate is a typical credit card interest rate, often stated as 1.1% per month.]

[ ] %

Show My Work (Optional)

7. -/1 pointsBerrFinMath1 2.2.012.

You have just received $175,000 from the estate of a long-lost rich uncle. If you invest all your inheritance in a tax-free bond fund earning 6.8% compounded quarterly, how long do you have to wait to become a millionaire? (Round your answer to two decimal places.)

[ ] yr

Show My Work (Optional)

8. -/1 pointsBerrFinMath1 2.2.014.

You have just won $140,000 from a lottery. If you invest all this amount in a tax-free money market fund earning 8% compounded weekly, how long do you have to wait to become a millionaire? (Round your answer to two decimal places.)

[ ] yr

Show My Work (Optional)

9. -/1 pointsBerrFinMath1 2.3.001.

In the following ordinary annuity, the interest is compounded with each payment, and the payment is made at the end of the compounding period.

Find the accumulated amount of the annuity. (Round your answer to the nearest cent.)

$4500 annually at 5% for 10 years.

$ [ ]

Show My Work (Optional)

10. -/1 pointsBerrFinMath1 2.3.003.

In the following ordinary annuity, the interest is compounded with each payment, and the payment is made at the end of the compounding period.

Find the required payment for the sinking fund. (Round your answer to the nearest cent.)

Monthly deposits earning 6% to accumulate $8000 after 10 years.

$ [ ]

Show My Work (Optional)

11. -/1 pointsBerrFinMath1 2.3.005.

In the following ordinary annuity, the interest is compounded with each payment, and the payment is made at the end of the compounding period.

Find the amount of time needed for the sinking fund to reach the given accumulated amount. (Round your answer to two decimal places.)

$2500 yearly at 7% to accumulate $100,000.

[ ] yr

Show My Work (Optional)

12. -/2 pointsBerrFinMath1 2.3.007.

In the following ordinary annuity, the interest is compounded with each payment, and the payment is made at the end of the compounding period.

An individual retirement account, or IRA, earns tax-deferred interest and allows the owner to invest up to $5000 each year. Joe and Jill both will make IRA deposits for 30 years (from age 35 to 65) into stock mutual funds yielding 9.8%. Joe deposits $5000 once each year, while Jill has $96.15 (which is 5000/52) withheld from her weekly paycheck and deposited automatically. How much will each have at age 65? (Round your answer to the nearest cent.)

Joe $ [ ]

Jill $ [ ]

Show My Work (Optional)

13. -/1 pointsBerrFinMath1 2.3.010.

In the following ordinary annuity, the interest is compounded with each payment, and the payment is made at the end of the compounding period.

You and your new spouse each bring home $1600 each month after taxes and other payroll deductions. By living frugally, you intend to live on just one paycheck and save the other in a mutual fund yielding 7.89% compounded monthly. How long will it take to have enough for a 20% down payment on a $175,000 condo in the city? (Round your answer to two decimal places.)

[ ] yr

Show My Work (Optional)

14.–/1 pointsBerrFinMath1 2.4.003.

Determine the payment to amortize the debt. (Round your answer to the nearest cent.)

Monthly payments on $170,000 at 3% for 25 years.

$ [ ]

Show My Work (Optional)

15.–/1 pointsBerrFinMath1 2.4.005.

Find the unpaid balance on the debt. (Round your answer to the nearest cent.)

After 7 years of monthly payments on $180,000 at 5% for 25 years.

$ [ ]

Show My Work (Optional)

16.–/1 pointsBerrFinMath1 3.1.001.

Solve the system by graphing. (Enter your answers as a comma-separated list. If the system is inconsistent, enter INCONSISTENT. If the system is dependent, enter DEPENDENT.)

$$\begin{cases} x + y = 4 \\ x - y = 2 \end{cases}$$

$(x, y) = ($ [ ] $)$

Show My Work (Optional)

17.–/1 pointsBerrFinMath1 3.1.003.

Solve the system by the elimination method. (Enter your answers as a comma-separated list. If the system is inconsistent, enter INCONSISTENT. If the system is dependent, enter DEPENDENT.)

$$\begin{cases} x + y = 13 \\ 2x + 3y = 31 \end{cases}$$

$(x, y) = ($ [ ] $)$

Show My Work (Optional)

18.–/2 pointsBerrFinMath1 3.1.008.

Formulate the situation as a system of two linear equations in two variables. Be sure to state clearly the meaning of your x- and y-variables. Solve the system by the elimination method. Be sure to state your final answer in terms of the original question.

A lawyer has found 60 investors for a limited partnership to purchase an inner-city apartment building, with each contributing either $4,000 or $8,000. If the partnership raised $336,000, then how many investors contributed $4,000 and how many contributed $8,000?

$x =$ [ ] $4,000$ *investors*

$y =$ [ ] $8,000$ *investors*

Show My Work (Optional)

19.–/4 pointsBerrFinMath1 3.2.001.

Find the dimension of the matrix.

$$\begin{pmatrix} 1 & 5 \\ 4 & 6 \\ 5 & 8 \end{pmatrix}$$

[ ] × [ ]

Find the values of the specified elements.

$a_{1,1}$ = [ ]

$a_{3,2}$ = [ ]

Show My Work (Optional)

20.–/6 pointsBerrFinMath1 3.2.003.

Find the augmented matrix representing the system of equations.

$$\begin{cases} x + 2y = 9 \\ 7x + 3y = 14 \end{cases}$$

$$\left(\begin{array}{cc|c} & & \\ & & \end{array}\right)$$

Show My Work (Optional)

21.–/6 pointsBerrFinMath1 3.2.005.

Carry out the row operation on the matrix.

$R_1 \leftrightarrow R_2$ on $\left(\begin{array}{cc|c} 8 & 3 & 21 \\ 6 & 5 & 30 \end{array}\right)$

$$\left(\begin{array}{cc|c} & & \\ & & \end{array}\right)$$

Show My Work (Optional)

22.–/6 pointsBerrFinMath1 3.2.006.

Carry out the row operation on the matrix.

$R_1 - R_2 \to R_1$ on $\left(\begin{array}{cc|c} 6 & 8 & 59 \\ 5 & 4 & 54 \end{array}\right)$

$$\left(\begin{array}{cc|c} & & \\ & & \end{array}\right)$$

Show My Work (Optional)

23.–/6 pointsBerrFinMath1 3.2.007.

Carry out the row operation on the matrix.

$\frac{1}{8}R_2 \to R_2$ on $\left(\begin{array}{cc|c} 4 & -5 & -41 \\ 0 & 8 & 40 \end{array}\right)$

$$\left(\begin{array}{cc|c} & & \\ & & \end{array}\right)$$

Show My Work (Optional)

24.–/1 pointsBerrFinMath1 3.2.008.

Interpret the augmented matrix as the solution of a system of equations. (Enter your answers as a comma-separated list. If the system is inconsistent, enter INCONSISTENT. If the system is dependent, enter DEPENDENT.)

$$\left(\begin{array}{cc|c} 1 & 0 & 4 \\ 0 & 1 & -9 \end{array}\right)$$

$(x, y) =$ (____ , ____)

Show My Work (Optional)

25.–/2 pointsBerrFinMath1 3.2.015.

Express the situation as a system of two equations in two variables. Be sure to state clearly the meaning of your x- and y-variables. Solve the system by row-reducing the corresponding augmented matrix. State your final answer in terms of the original question.

For the final days before the election, the campaign manager has a total of \$33,000 to spend on TV and radio campaign advertisements. Each TV ad costs \$3000 and is seen by 10,000 voters, while each radio ad costs \$500 and is heard by 2000 voters. Ignoring repeated exposures to the same voter, how many TV and radio ads will contact 120,000 voters using the allocated funds?

$x =$ ____ TV ads

$y =$ ____ radio ads

Show My Work (Optional)

26.–/12 pointsBerrFinMath1 3.3.001.

Find the augmented matrix representing the system of equations.

$$\begin{cases} x_1 + x_2 + x_3 = 2 \\ x_1 + 3x_2 + x_3 = 4 \\ x_1 + 2x_2 + 4x_3 = 2 \end{cases}$$

$$\left(\begin{array}{ccc|c} & & & \\ & & & \\ & & & \end{array}\right)$$

Show My Work (Optional)

27.–/1 pointsBerrFinMath1 3.3.003.

Interpret the row-reduced matrix as the solution of a system of equations. (Enter your answers as a comma-separated list. If the system is inconsistent, answer INCONSISTENT. If the system is dependent, parametrize the solutions in terms of the parameter t.)

$$\left(\begin{array}{ccc|c} 1 & 0 & 0 & 2 \\ 0 & 1 & 0 & 6 \\ 0 & 0 & 1 & -3 \end{array}\right)$$

$(x_1, x_2, x_3) =$ (____ , ____)

Show My Work (Optional)

28.–/12 pointsBerrFinMath1 3.3.007.

Use an appropriate row operation or sequence of row operations to find the equivalent row-reduced matrix.

$$\left(\begin{array}{ccc|c} 1 & 0 & 1 & 5 \\ 0 & 1 & 0 & 8 \\ 0 & 0 & 1 & 7 \end{array}\right)$$

$$\left(\begin{array}{ccc|c} & & & \\ & & & \\ & & & \end{array}\right)$$

Show My Work (Optional)

29.–/9 pointsBerrFinMath1 3.4.002.

Use the given matrix to find the expression.

$$C = \begin{pmatrix} 5 & 6 & 2 \\ 8 & 7 & 6 \\ 6 & 9 & 4 \end{pmatrix};\ 3C$$

$$3C = \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$$

Show My Work (Optional)

30.–/9 pointsBerrFinMath1 3.4.004.

Use the given matrices to find the expression.

$$A = \begin{pmatrix} 8 & 8 & 6 \\ 9 & 9 & 1 \\ 2 & 4 & 2 \end{pmatrix} \quad C = \begin{pmatrix} 6 & 2 & 1 \\ 8 & 5 & 3 \\ 9 & 5 & 7 \end{pmatrix};\ A + C$$

$$A + C = \begin{pmatrix} & & \\ & & \\ & & \end{pmatrix}$$

Show My Work (Optional)

31.–/2 pointsBerrFinMath1 3.4.007.

Find the matrix product.

$$\begin{pmatrix} 4 & 3 & 1 \\ 1 & 2 & 2 \end{pmatrix} \begin{pmatrix} 1 \\ -4 \\ 5 \end{pmatrix}$$

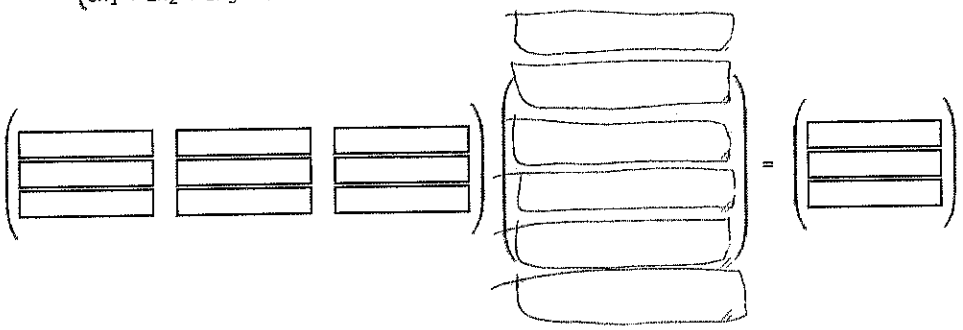
$$\begin{pmatrix} \\ \end{pmatrix}$$

Show My Work (Optional)

32. –/15 pointsBerrFinMath1 3.4.009.

Rewrite the system of linear equations as a matrix equation $AX = B$.

$$\begin{cases} x_1 + 2x_2 + 5x_3 = 5 \\ x_1 + x_2 + x_3 = 1 \\ 6x_1 + 2x_2 + 3x_3 = 8 \end{cases}$$



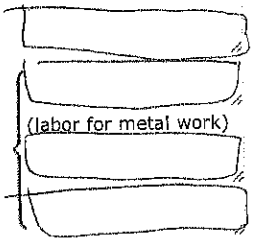
Show My Work (Optional)

33. –/7 pointsBerrFinMath1 4.1.008.

Formulate the situation as a system of inequalities. (Let x represent the number of dinghies the company can manufacture and y represent the number of rowboats.)

A boat company manufactures aluminum dinghies and rowboats. The hours of metal work and painting needed for each are shown in the table, together with the hours of skilled labor available for each task. How many of each kind of boat can the company manufacture?

(hours)	**Dinghy**	**Rowboat**	**Labor Available**
Metal Work	2	3	114
Painting	2	2	100



(labor for metal work)

(labor for painting)

$x \geq 0, y \geq 0$

Sketch the feasible region.

Find the vertices. (Order your answers from smallest to largest x, then from smallest to largest y.)

$(x, y) =$ (

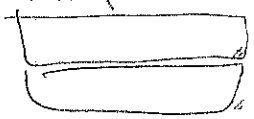
)

$(x, y) =$ (

)

$(x, y) =$ (

)

$(x, y) = ($ )

Show My Work (Optional)

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34. -/1 pointsBerrFinMath1 4.2.006.

Solve the linear programming problem by sketching the region and labeling the vertices, deciding whether a solution exists, and then finding it if it does exist. (If an answer does not exist, enter DNE.)

Minimize $C = 10x + 50y$

Subject to $\begin{cases} 2x + 5y \geq 20 \\ x \geq 0, \ y \geq 0 \end{cases}$

$C =$ [ ]

Show My Work (Optional)