

 **Take Assessment: Exam 5**

Name Exam 5

Instructions

Multiple Attempts This Test allows 2 attempts. This is attempt number 1.

Force Completion This Test can be saved and resumed later.

▼ **Question Completion Status:**

Question 1**5 points**[Save](#)

Write the partial fraction decomposition of the rational expression.

$$\frac{-5x^2 - 7x + 3}{(x + 2)(x + 1)^2}$$

$$\frac{-3}{x + 2} + \frac{2}{x + 1} + \frac{5}{(x + 1)^2}$$

$$\frac{5}{x + 2} + \frac{-2}{x + 1} + \frac{3}{(x + 1)^2}$$

$$\frac{3}{x + 2} + \frac{-2}{x + 1} + \frac{-5}{(x + 1)^2}$$

$$\frac{-3}{x + 2} + \frac{-2}{x + 1} + \frac{5}{(x + 1)^2}$$

Question 2**5 points**[Save](#)

Solve the system of equations.

$$\begin{cases} x - y + 3z = 7 \\ 5x + z = 4 \\ x + 4y + z = 24 \end{cases}$$

inconsistent (no solution)

$$x = 4, y = 0, z = 5$$

$$x = 4, y = 5, z = 0$$

$$x = 0, y = 5, z = 4$$

Question 3**5 points**[Save](#)

Write the partial fraction decomposition of the rational expression.

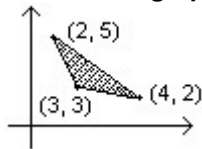
$$\frac{3x - 2}{x^3 - 1}$$

$$\frac{\frac{1}{3} + \frac{-\frac{1}{3}x + \frac{7}{3}}{x-1}}{\frac{1}{2} + \frac{\frac{5}{2}}{x-1}}$$

$$\frac{\frac{3}{(x-1)^2} + \frac{1}{(x-1)^3}}{\frac{3}{x-1} + \frac{-3(x-7)}{x^2+x+1}}$$

Question 4**5 points**[Save](#)

Find the maximum or minimum value of the objective function, subject to the constraints graphed in this feasible region.



$z = x + 7y$. Find maximum.

Maximum 18

Maximum 24

Maximum 30

Maximum 37

Question 5**5 points**[Save](#)

Use the properties of determinants to find the value of the second determinant, given the value of the first.

$$\begin{vmatrix} x & y & z \\ u & v & w \\ 1 & 1 & -2 \end{vmatrix} = 11 \quad \begin{vmatrix} x & y & z \\ u & v & w \\ 3 & 3 & -6 \end{vmatrix} = ?$$

-11

-33

33

11

Question 6**5 points**[Save](#)

Find the value(s) of the function, subject to the system of inequalities.

Find the maximum and minimum of

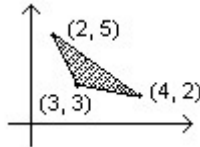
$z = 11x + 22y$ subject to $x \geq 0$, $y \geq 0$, $4x + 5y \leq 30$, $4x + 3y \leq 20$, $x \leq 5$, $y \leq 8$.

-96.25; -132

55; -132

-132; 0

55; 0

Question 7**5 points**[Save](#)**Perform the indicated matrix operations.**Let $A = \begin{bmatrix} -2 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \end{bmatrix}$. Find $3A + 4B$. $\begin{bmatrix} 1 & 2 \end{bmatrix}$ $\begin{bmatrix} -3 & 4 \end{bmatrix}$ $\begin{bmatrix} -2 & 6 \end{bmatrix}$ $\begin{bmatrix} -6 & 4 \end{bmatrix}$ **Question 8****5 points**[Save](#)**Find the maximum or minimum value of the objective function, subject to the constraints graphed in this feasible region.** $z = x + 6y + 9$ Find minimum.

Minimum 25

Minimum 31

No Minimum

Minimum 41

Question 9**5 points**[Save](#)**Solve the problem.**

The Family Arts Center charges \$22 for adults, \$17 for senior citizens, and \$10 for children under 12 for their live performances on Sunday afternoon. This past Sunday, the paid revenue was \$11,820 for 740 tickets sold. There were 46 more children than adults. How many children attended?

265 children

219 children

255 children

256 children

Question 10**5 points**[Save](#)**Perform the indicated matrix operations.**Let $A = \begin{bmatrix} 2 & 3 \\ 2 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 4 \\ -1 & 6 \end{bmatrix}$. Find $4A + B$.

$$\begin{bmatrix} 8 & 28 \\ 4 & 48 \end{bmatrix}$$

$$\begin{bmatrix} 8 & 16 \\ 7 & 30 \end{bmatrix}$$

$$\begin{bmatrix} 8 & 7 \\ 7 & 12 \end{bmatrix}$$

$$\begin{bmatrix} 8 & 16 \\ 1 & 12 \end{bmatrix}$$

Question 11**5 points** **Find the value of the determinant.**

$$\begin{vmatrix} 3 & 1 \\ 1 & 2 \end{vmatrix}$$

7

-5

1

5

Question 12**5 points** **Solve the problem.**

A retired couple has \$190,000 to invest to obtain annual income. They want some of it invested in safe Certificates of Deposit yielding 7%. The rest they want to invest in AA bonds yielding 10% per year. How much should they invest in each to realize exactly \$17,200 per year?

\$120,000 at 7% and \$70,000 at 10%

\$130,000 at 7% and \$60,000 at 10%

\$130,000 at 10% and \$60,000 at 7%

\$140,000 at 10% and \$50,000 at 7%

Question 13**5 points** **Perform the indicated operations and simplify.**

Let $A = \begin{bmatrix} 3 & -4 \\ -2 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 5 & -2 & 8 \\ 1 & 0 & -3 \end{bmatrix}$, and $C = \begin{bmatrix} 7 & -9 & 0 \\ 3 & -5 & 1 \\ -1 & 6 & 2 \end{bmatrix}$. Find $AB + BC$.

$$\begin{bmatrix} 32 & 19 & 40 \\ -15 & 31 & -37 \end{bmatrix}$$

$$\begin{bmatrix} 68 & 3 & 31 \\ 8 & -2 & -5 \end{bmatrix}$$

$$\begin{bmatrix} -10 & -19 & 12 \\ -15 & 31 & -25 \end{bmatrix}$$

$$\begin{bmatrix} 32 & 7 & 50 \\ 5 & -23 & -37 \end{bmatrix}$$

Question 14

5 points

Write the partial fraction decomposition of the rational expression.

$$\frac{x+1}{(x-2)^2(x+4)}$$

$$\frac{\frac{1}{2}}{(x-2)^2} + \frac{-\frac{1}{12}}{x+4}$$

$$\frac{12}{x-2} + \frac{2}{(x-2)^2} + \frac{-12}{x+4}$$

$$\frac{-1}{x-2} + \frac{\frac{1}{4}x}{(x-2)^2} + \frac{-\frac{1}{4}}{x+4}$$

$$\frac{\frac{1}{12}}{x-2} + \frac{\frac{1}{2}}{(x-2)^2} + \frac{-\frac{1}{12}}{x+4}$$

Question 15

5 points

Write a system of equations associated with the augmented matrix. Do not solve.

$$\left[\begin{array}{ccc|c} 9 & 3 & 9 & -2 \\ 7 & 0 & 7 & 4 \\ 3 & 4 & 0 & 2 \end{array} \right]$$

$$\begin{cases} 9x + 3y + 9z = -2 \\ 7x + 7z = 4 \\ 3x + 4z = 2 \end{cases}$$

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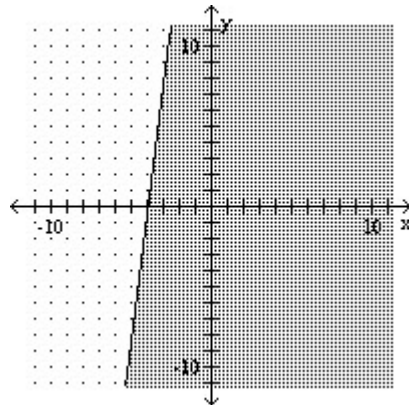
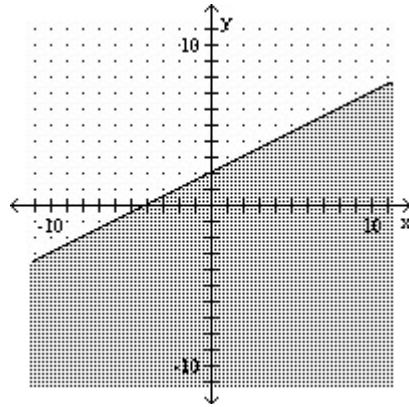
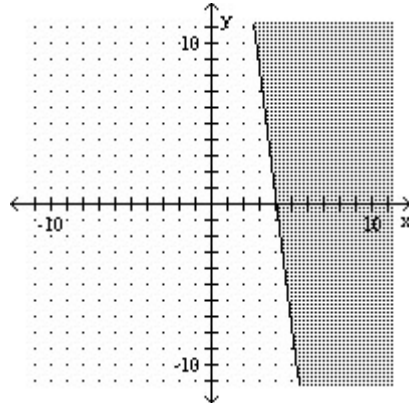
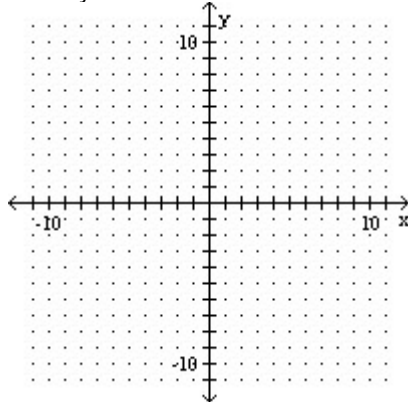
$$\begin{cases} 9x - 3y + 9z = -2 \\ 7x + 7z = -4 \\ 3x + 4y = -2 \end{cases}$$

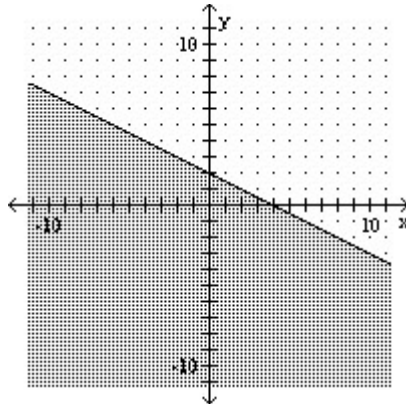
Question 16

5 points

Graph the inequality.

$$2x + 4y \leq 8$$





Question 17

5 points

[Save](#)

Solve the problem.

Jenny receives \$1270 per year from three different investments totaling \$20,000. One of the investments pays 6%, the second one pays 8%, and the third one pays 5%. If the money invested at 8% is \$1500 less than the amount invested at 5%, how much money has Jenny invested in the investment that pays 6%?

- \$8500
- \$4500
- \$10,000
- \$1500

Question 18

5 points

[Save](#)

Use the properties of determinants to find the value of the second determinant, given the value of the first.

$$\begin{vmatrix} x & y & z \\ u & v & w \\ 1 & 3 & 2 \end{vmatrix} = -41 \quad \begin{vmatrix} 1 & 3 & 2 \\ u & v & w \\ x & y & z \end{vmatrix} = ?$$

- Can't determine
- 41
- 0
- 41

Question 19

5 points

[Save](#)

Write the partial fraction decomposition of the rational expression.

$$\frac{x^2 - 111}{x^4 - x^2 - 72}$$

$$\frac{1}{x+3} - \frac{1}{x-3} - \frac{7}{x^2+8}$$

$$\frac{1}{x+3} - \frac{1}{x-3} + \frac{7}{x^2+8}$$

$$\frac{1}{x+3} + \frac{1}{x-3} - \frac{7}{x^2+8}$$

$$\frac{1}{x+3} + \frac{1}{x-3} + \frac{7}{x^2+8}$$

Question 20**5 points****Use Cramer's rule to solve the linear system.**

$$\begin{cases} 9x - 5y - 2z = -8 \\ -5x + 4y + 2z = 19 \\ 2x - 7y + 2z = -45 \end{cases}$$

$$x = 6, y = 7, z = 4$$

$$x = 9, y = 4, z = 9$$

$$x = 5, y = -9, z = -4$$

$$x = 5, y = 9, z = 4$$