

Unit 4+ Review – Matrix Applications

Name _____ Per _____

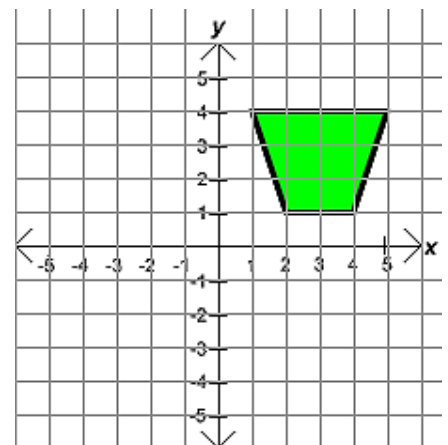
Given $A = \begin{bmatrix} 2 & -2 \\ -4 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} -9 & 4 \\ -10 & 5 \end{bmatrix}$ find each of the following.

<p>1. If $A \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -10 \\ 20 \end{bmatrix}$, then write the original equations.</p>	<p>2. If $A \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -10 \\ 20 \end{bmatrix}$, then solve the equations.</p>
<p>3. If $B \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 10 \\ 10 \end{bmatrix}$, what are the original equations?</p>	<p>4. If $B \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 10 \\ 10 \end{bmatrix}$, then what is the value of x and y?</p>

5. Matrix R is a 270 degrees rotational matrix (counter-clockwise) and Matrix C gives the coordinates of the shape.

$$R = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} \text{ and } C = \begin{bmatrix} 2 & 1 & 5 & 4 \\ 1 & 4 & 4 & 1 \end{bmatrix}$$

Calculate RC, to find the coordinates of the rotated figure. Then, draw the rotated figure.



6. Amanda is a wedding planner looking at different options for rentals for two separate weddings. She is considering AV Party Rental and Party Planners Plus, and will go with whichever company she can get a better deal from. Below are the specifications for each wedding and for each rental company. Use matrices to find the cost of each wedding using each rental company. Then help Amanda decide which company she should hire for each wedding.

Wedding	Chairs	Tables	Dance Floors
Wedding #1	200	20	1
Wedding #2	192	24	1

Rental Company	AV Party Rental	Party Planners Plus
Chairs	\$0.99	\$1.05
Tables	\$8.75	\$8.99
Dance Floors	\$452	\$435

Answer Key

1. $2x - 2y = -10$ $-4x + 6y = 20$	2. $x = -5, y = 0$	3. $-9x + 4y = 10$ $-10x + 5y = 10$									
4. $x = -2, y = -2$	5. $\begin{bmatrix} 1 & 4 & 4 & 1 \\ -2 & -1 & -5 & -4 \end{bmatrix}$, graph	6. <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th>AV Party Rental</th> <th>Party Planners Plus</th> </tr> </thead> <tbody> <tr> <td>Wedding #1</td> <td>\$825</td> <td>\$824.80</td> </tr> <tr> <td>Wedding #2</td> <td>\$852.08</td> <td>\$852.36</td> </tr> </tbody> </table> <p>Wedding #1 should hire Party Planners Plus. Wedding #2 should hire AV Party Rental.</p>		AV Party Rental	Party Planners Plus	Wedding #1	\$825	\$824.80	Wedding #2	\$852.08	\$852.36
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