Quiz 2 Review

Remember to show your work to receive credit!

space – 0 A = 1 B = 2 C = 3 D = 4 E = 5 F = 6 G = 7 H = 8 I = 9 J = 10 K = 11 L = 12 M = 13

N = 14 O = 15 P = 16 Q = 17 R = 18 S = 19 T = 20 U = 21 V = 22 W = 23 X = 24 Y = 25 Z = 26

1. Encode the message, The Lion King, using matrix A $\begin{bmatrix} 3 & -2 & 4 \\ 0 & 1 & -1 \\ 2 & -3 & 5 \end{bmatrix}$. Show work.

2. Decode the message using encoding matrix A $\begin{bmatrix} 2 & -1 \\ -3 & 0 \end{bmatrix}$. Show work.

-15 -6 16 -14 -24 -9 14 -7 13 -14 -19 -13

3. The local shop sells 3 types of pies. Beef pies cost $3 each, chicken pies cost $4 each and vegetable pies cost $2 each.

    Create a matrix operation to show the total amount of money the local shop made each day of the week on pies. Show the resulting matrix and label the rows and columns.

	Mon	Tue	Wed	Thu
Beef	13	9	7	15
Chicken	8	7	4	6
Vegetable	6	4	0	3

4.   A landlord owns 3 condominiums, a 1-bedroom condo, a 2-bedroom condo, and a 3-bedroom condo. The total rent she receives is $1240. She needs to make repairs on the condos, and it costs 10% of the 1-bedroom condo's rent for its repairs, 20% of the 2-bedroom for its repairs, and 30% of the 3-bedroom condo's rent for its repairs. The total repair bill was $276. The 3-bedroom condo's rent is twice the 1-bedroom condo's rent. How much is the rent for each of the condos?

5. Suppose an animal population has the characteristics described in the table.

Age Groups (years)	0-3	3-6	6-9	9-12	12-15
Survival rate	0.6	0.7	0.8	0.6	0
Birth rate	0	.6	1.3	0.7	0.2

a. Construct the Leslie matrix for this animal.

b. For the initial female populations given in the table below, find the population distribution after one cycle **by hand. Show ALL your calculations.**

Age Group	0-3	3-6	6-9	9-12	12-15
Number	10	18	25	16	3
Amount after one cycle					

c. Find the female age distribution **and** the total female population after 6 years.

Fill in the table below after 6 years:

Age Group	0-3	3-6	6-9	9-12	12-15
Number					

Total Population:

d. How long until a total of 200 female animals?

e. What is the long term growth rate? Express your final answer as a percent to one decimal place.