1. **GC okay** Solve the following system using matrices (and show clear work in the process!):

a.  b. 

 

2. Perform the following matrix multiplication without a graphing calculator:



3. Solve for the missing letters:





4. Solve the following for x and y without a graphing calculator:





5. **GC okay** The sum of three numbers is 6. The third number is the sum of the first and second numbers. The first number is one more than the third number. Write a matrix equation that would find the three numbers and then solve.





6. **GC okay** Given the following facts, how many of each type of ticket were sold?

-The Cinema sold a total of 8500 movie tickets.

-Proceeds totaled $64,600

-Matinee admission costs $5

-Student admission costs $6

-Regular admission costs $8.50

-Twice as many student tickets sold compared to the matinee tickets.

5800 regular tickets, 1800 student tickets and 900 matinee tickets were sold

7. Use matrix multiplication to show how much it costs to feed each cat per day.

Which cat is most expensive to feed? What is the difference from the most expensive to least expensive cat?

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | |  | Dry Food (cups) | Wet Food (cups) | Treats (number) | | Teddy | 2.1 | 3 | 8 | | Luna | 1.4 | 2 | 15 | | Louie | 3.8 | 2.1 | 7 | | |  |  | | --- | --- | |  | Cost | | Dry Food | $ 0.84 per cup | | Wet Food | $1.47 per cup | | Treats | $0.26 each | |

Teddy is the most expensive & 8.25 a day. He is $.15 more expensive than Louie and $.23 more expensive then Luna.

8. Solve the system of equations without a graphing calculator using matrices

a.  b. 

 

9. Find the determinant of each matrix. Then find the inverse of the matrix, if it exists. No GC

a.  b.  c. 

  

10. Amelia purchased 25 total pounds of dog food, bird seed, and cat food for $100. She purchased 10 pounds more dog food than bird seed. The cost per pound of each type of food is shown.

1. Define your variables and write a set of linear equations for this situation.
2. Determine the number of pounds of each type of food Amelia purchased.

Let: d = number of pounds of dog food, b = number of pounds of bird seed, c = number of pounds of cat food

; 13 pounds of dog food, 9 pounds of cat food, 3 pounds of bird seed