Use matrices *A*, *B*, *C, D,* and *E* to perform the operations below if possible.

    

1. 
2. 
3. **
4. Find the inverse of both *A* and *B* to determine .
5. Find 
6. Find .
7. Write the image matrix after translating matrix *D* 4 units to the right and 6 units down.
8. Find 
9. Find 
10. Write the new matrix after translating matrix A 5 units to the left and 2 units up.
11. Find the determinant of matrix *B*
12. Find 
13. Evaluate 
14. Find *EC*
15. Name a scalar that could be used to dilate a figure whose vertices are represented by  to a figure whose vertices are represented by ?
16. Find the inverse of without a calculator (show all steps).
17. Determine the value of *x* if the matrix  has no inverse.
18. For the matrix product, determine the value of 
19. Find the image matrix after reflecting a triangle with vertices over the y-axis using the reflection matrix ?

Use  ,, and or #20-23.

1. Find the dimensions of *GF*, if it exists.
2. Find the dimensions of *FG*, if it exists.
3. Find the dimensions of *FH*, if it exists.
4. Find the dimensions of *GH*, if it exists.
5. Write an augmented matrix for the system of equations
6. Using the augmented matrix you wrote in #24, find the solution to the system of equations.
7. Your club is creating a money tree to give to a local family as a Christmas gift. You have collected a total of $225 for the tree. You can fit a total of 36 bills on the money tree, and you plan to use a combination of $5 bills and $10 bills on the tree. Write a matrix equation to represent this situation.
8. Using the information in #26, how many of each type of bill should you use for the money tree?
9. Bethany puts $750.00 in a savings account at the bank which pays 3.5% interest. How much money does she have after 10 years?
10. Amanda has a balance of $7450.00 in an account that pays 2.15% interest compounded monthly. What is her balance at the end of 5 years?
11. Stan deposits $6275.00 at 1.25% interest, compounded continuously for 8 years. How much interest did he earn?
12. A car is originally worth $26,460. It takes 12 years for this car to totally depreciate. How long will it take for the car to be worth $10,500?
13. The straight line depreciation equation for a car is . What is the car worth after 9 years?
14. James bought a used car valued at $5,250. When the car was new, it was sold for $20,900. If the car depreciates exponentially at a rate of 9.5% per year, approximately how old is the car? Give your answer to the nearest hundredth of a year.
15. Linda’s new car cost her $26,000. She was told that this make and model depreciates exponentially at a rate of  per year. How much will her car be worth after years?
16. You invest $7000 in an account bearing 5% interest for ten years. How much will the account be worth if compounded quarterly? What about monthly?
17. A long-term bond returns you $12,936.41 at the end of twelve. Assuming an interest rate of 3.5% compounded daily, what was the amount of your initial investment?
18. Your bank is offering a savings account with a nominal rate of 1.5%, compounded continuously. If you deposit $1,000 in 2010, what will your balance be in 2020?
19. The senior class is planning a Valentine’s Day fundraiser. They have to order their supplies ahead of time, so they have asked you to help them determine what they should order. The class secretary has told you that they plan to sell red roses and teddy bears. The red roses cost $1 each and will be sold for $3 each. The teddy bears cost $2 each and will sell for $5 each. Due to space considerations and delivery times, the class can order no more than 200 bears and no more than 400 roses for the fundraiser. They also have to stay within a $500 budget. How many of each item should they order to maximize their profit from the fundraiser? What is the maximum profit they can make given these conditions?
    1. Define the variables
    2. Write and graph the system of constraints
    3. Find the vertices of the feasible region
    4. Write the objective function
    5. Evaluation the vertices of the feasible region in the objective function to answer the question.