Name

Date Period

Chapter 7.7: Concept Attainment Lesson:

The of a Matrix:

Decide which of the following examples are true and which are false. If the example is false, explain why.

**Examples:**

1. Determinants can only be found for square matrices.
2. All matrices have at least two determinants.
3. The determinants of a square matrix, of order 2x2 or greater, are found by adding entries in a row or column and multiplying them by their cofactors.
4. The determinant of a triangular matrix can be found by multiplying the entries in the matrices diagonal.
5. If the determinant of A equals the determinant of B and both are 2x2 matrices, then A must = B?
6. A matrix this has all zero entries above and below its main diagonal is called a triangular matrix.
7. Minors are found by adding a row or column to a matrix.
8. The determinant is also called the cross product and is found in a cross-like manner.
9. If a square matrix has an entire row of zeros, then the determinant will always be zero.
10. Large (4x4 or greater) matrices do not have determinants.
11. The determinant of a matrix can only be a positive number.
12. Cofactors follow a sign pattern and are found using the minors of the matrix.

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| **True** | **False** |
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Use the following websites to help you sort the examples. Also, find two more reliable websites that you can use to learn about the concept.

**Websites:**

<http://www.purplemath.com/modules/minors.htm>

<http://www.mathsisfun.com/algebra/matrix-determinant.html>

<http://www.purplemath.com/modules/determs2.htm>

<http://www.sosmath.com/matrix/matrix3/matrix3.html>

**Additional Helpful Websites:**

1.

2.

So what do you think is the main point of this lesson? Create definitions for determinant, minor, cofactor and triangular matrix based off of your sorting of the examples and explain why you choose those definitions.

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Create a name for the lesson that fills in the blanks on page 1.

The of a Matrix

Now we will discuss what the concept of the lesson really is. Use the box below to list any additional websites or ideas that your classmates may bring up in the discussion. Then list what the definitions and name of the lesson really are.

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The correct definitions and lesson name are:

Determinant .

Minor .

Cofactor .

Triangular Matrix .

Lesson Name: The of a Matrix

Were you right? Wrong? Close? How comfortable do you feel with the material?

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Answers:

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| --- | --- |
| **True** | **False** |
| 1. Determinants can only be found for square matrices.
2. The determinants of a square matrix, of order 2x2 or greater, are found by adding entries in a row or column and multiplying them by their cofactors.
3. The determinant of a triangular matrix can be found by multiplying the entries in the matrices diagonal.
4. The determinant is also called the cross product and is found in a cross-like manner.
5. If a square matrix has an entire row of zeros, then the determinant will always be zero.
6. Cofactors follow a sign pattern and are found using the minors of the matrix.
 | 1. All matrices have at least two determinants. False, All matrices have only one determinant.
2. If the determinant of A equals the determinant of B and both are 2x2 matrices, then A must = B? False, students could provide numerous examples.
3. A matrix this has all zero entries above and below its main diagonal is called a triangular matrix. False, it is called a diagonal matrix.
4. Minors are found by adding a row or column to a matrix. False, minors are found by deleting rows and columns from a matrix of size 3x3 or bigger and finding the determinant of the remaining elements.
5. Large (4x4 or greater) matrices do not have determinants. False, the determinants do exist, but they are very tedious to find. The only exception is in the case of a triangular matrix.
6. The determinant of a matrix can only be a positive number. False, determinants can be positive, negative or zero.
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All other boxes will be filled in as the students learn and answers will vary. All definitions will be put together by the class and will not be copied word-for-word from the book.