

MATH 234
QUIZ TWO

Student Name: Key Student Number: _____

Question 1. Answer by true or false:

1. T $(AB)C = A(BC)$ for all matrices A , B , and C where multiplication is allowed.
2. T $A + B = B + A$ for all $m \times n$ matrices A and B .
3. F $AB = BA$ for all $n \times n$ matrices A and B .
4. T $A(\alpha B) = (\alpha A)B$ for all $m \times n$ matrices A and B .
5. F $A(B + C) = (A + B)C$ for all $n \times n$ matrices A , B , and C .
6. F If A and B are $n \times n$ matrices, then $(A + B)(A - B) = A^2 - B^2$.
7. F If A is a 5×2 matrix and $\mathbf{b} = \mathbf{a}_1 - 2\mathbf{a}_2$, then the system $A\mathbf{x} = \mathbf{b}$ has a unique solution.
8. T Let A be a 4×3 matrix with $\mathbf{a}_1 = \mathbf{a}_2$. If $\mathbf{b} = \mathbf{a}_1 + \mathbf{a}_2 + \mathbf{a}_3$, then the system $A\mathbf{x} = \mathbf{b}$ has infinitely many solutions.
9. T If A is nonsingular then A^T is nonsingular.

Question 2 Circle the most correct answer:

1. Suppose that \mathbf{y} and \mathbf{z} are both solutions to $A\mathbf{x} = \mathbf{0}$ then

- (a) $\mathbf{y} + \mathbf{z}$ is a solution to $A\mathbf{x} = \mathbf{0}$
(b) $A\mathbf{x} = \mathbf{0}$ has exactly two solutions
(c) $\mathbf{y} = \mathbf{z}$
(d) None of the above

2. Suppose that A and B are symmetric matrices, then

- (a) AB is symmetric
(b) $AB = (BA)^T$
(c) A and B are singular
(d) A and B are nonsingular