

## Multiple-Choice Test

### Chapter 4.04 Unary Matrix Operations

1. If the determinant of a  $4 \times 4$  matrix  $[A]$  is given as 20, then the determinant of  $5[A]$  is
  - (A) 100
  - (B) 12500
  - (C) 25
  - (D) 62500
2. If the matrix product  $[A][B][C]$  is defined, then  $([A][B][C])^T$  is
  - (A)  $[C]^T [B]^T [A]^T$
  - (B)  $[A]^T [B]^T [C]^T$
  - (C)  $[A][B][C]^T$
  - (D)  $[A]^T [B][C]$
3. The trace of a matrix
$$\begin{bmatrix} 5 & 6 & -7 \\ 9 & -11 & 13 \\ -17 & 19 & 23 \end{bmatrix}$$
is
  - (A) 17
  - (B) 39
  - (C) 40
  - (D) 110
4. A square  $n \times n$  matrix  $[A]$  is symmetric if
  - (A)  $a_{ij} = a_{ji}, i = j$  for all  $i, j$
  - (B)  $a_{ij} = a_{ji}, i \neq j$  for all  $i, j$
  - (C)  $a_{ij} = -a_{ji}, i = j$  for all  $i, j$
  - (D)  $a_{ij} = -a_{ji}, i \neq j$  for all  $i, j$

5. The determinant of the matrix

$$\begin{bmatrix} 25 & 5 & 1 \\ 0 & 3 & 8 \\ 0 & 9 & a \end{bmatrix}$$

is 50. The value of  $a$  is then

- (A) 0.6667
  - (B) 24.67
  - (C) -23.33
  - (D) 5.556
6.  $[A]$  is a  $5 \times 5$  matrix and a matrix  $[B]$  is obtained by the row operations of replacing  $Row1$  with  $Row3$ , and then  $Row3$  is replaced by a linear combination of  $2 \times Row3 + 4 \times Row2$ . If  $\det(A) = 17$ , then  $\det(B)$  is equal to
- (A) 12
  - (B) -34
  - (C) -112
  - (D) 112