

# TUGAS I MATRIK

The questions are all straightforward and based on the work covered. You will have no trouble.

1 If  $\mathbf{A} = \begin{pmatrix} 2 & 4 & 6 & 3 \\ 1 & 7 & 0 & 4 \end{pmatrix}$  and  $\mathbf{B} = \begin{pmatrix} 3 & 5 & 2 & 7 \\ 9 & 1 & 6 & 3 \end{pmatrix}$  determine

(a)  $\mathbf{A} + \mathbf{B}$  and (b)  $\mathbf{A} - \mathbf{B}$ .

2 Given that  $\mathbf{A} = \begin{pmatrix} 6 & 0 & 4 \\ 1 & 5 & -3 \end{pmatrix}$  and  $\mathbf{B} = \begin{pmatrix} 2 & 9 \\ 8 & 0 \\ -4 & 7 \end{pmatrix}$  determine

(a)  $3\mathbf{A}$ , (b)  $\mathbf{A}\mathbf{B}$ , (c)  $\mathbf{B}\mathbf{A}$ .

3 If  $\mathbf{A} = \begin{pmatrix} 2 & 3 & 5 \\ 1 & 7 & 4 \\ 8 & 0 & 6 \end{pmatrix}$ , form the transpose  $\mathbf{A}^T$  and determine the matrix

product  $\mathbf{A}^T\mathbf{I}$ .

4 Show that the square matrix  $\mathbf{A} = \begin{pmatrix} 3 & 2 & 4 \\ 1 & 5 & 3 \\ -1 & 8 & 2 \end{pmatrix}$  is a singular matrix.

5 If  $\mathbf{A} = \begin{pmatrix} 1 & 4 & 3 \\ 6 & 2 & 5 \\ 1 & 7 & 0 \end{pmatrix}$ , determine (a)  $|\mathbf{A}|$  and (b)  $\text{adj } \mathbf{A}$ .

6 Find the inverse of the matrix  $\mathbf{A} = \begin{pmatrix} 2 & 1 & 4 \\ 3 & 5 & 1 \\ 2 & 0 & 6 \end{pmatrix}$

7 Express the following set of linear equations in matrix form:

$$2x_1 + 4x_2 - 5x_3 = -7$$

$$x_1 - 3x_2 + x_3 = 10$$

$$3x_1 + 5x_2 + 3x_3 = 2$$

8 Solve the following set of linear equations by the matrix method:

$$x_1 + 3x_2 + 2x_3 = 3$$

$$2x_1 - x_2 - 3x_3 = -8$$

$$5x_1 + 2x_2 + x_3 = 9$$

9 For the following set of simultaneous equations:

(a) form the augmented coefficient matrix

(b) solve the equations by Gaussian elimination.

$$x_1 + 2x_2 + 3x_3 = 5$$

$$3x_1 - x_2 + 2x_3 = 8$$

$$4x_1 - 6x_2 - 4x_3 = -2$$