

Assignment for Section 2.4: Rules for matrix operations

(1) Let

$$A = \begin{bmatrix} 1 & 5 \\ 2 & 3 \end{bmatrix}, \quad B = \begin{bmatrix} 0 & 2 \\ 0 & 1 \end{bmatrix}, \quad C = \begin{bmatrix} 3 & 1 \\ 0 & 0 \end{bmatrix}.$$

Add AB to AC , and compare $AB + AC$ with $A(B + C)$.(2) Show that $(A + B)^2$ is different from $A^2 + 2AB + B^2$ when

$$A = \begin{bmatrix} 1 & 2 \\ 0 & 0 \end{bmatrix}, \quad B = \begin{bmatrix} 1 & 0 \\ 3 & 0 \end{bmatrix}.$$

(3) Let $A = \begin{bmatrix} 2 & 1 & 0 \\ -2 & 0 & 1 \\ 8 & 5 & 3 \end{bmatrix}.$

(a) Find the matrix E_{21} that produces zero in the $(2, 1)$ position of $E_{21}A$.(b) Find the matrix E_{31} that produces zero in the $(3, 1)$ position of $E_{31}A$.(c) Find the single matrix $E = E_{21}E_{31}$ that produces both zeros at once. Multiply EA .

Please submit a hard copy of

- the assignments for **Section 2.1, Section 2.2, Section 2.3 and Section 2.4** at the beginning of class on **11st, November**. Make sure

- (1) your **name, student ID and major** are written on the first page, and
- (2) the papers are stapled together.