

Soal:

1. Hitung determinan matriks berikut berdasarkan pemeriksaan.

$$\text{a. } \begin{vmatrix} 2 & -40 & 17 \\ 0 & 1 & 11 \\ 0 & 0 & 3 \end{vmatrix}$$

$$\text{b. } \begin{vmatrix} 1 & 0 & 0 & 0 \\ -9 & -1 & 0 & 0 \\ 12 & 7 & 8 & 0 \\ 4 & 5 & 7 & 2 \end{vmatrix}$$

$$\text{c. } \begin{vmatrix} 1 & 2 & 3 \\ 3 & 7 & 6 \\ 1 & 2 & 3 \end{vmatrix}$$

$$\text{d. } \begin{vmatrix} 3 & -1 & 2 \\ 6 & -2 & 4 \\ 1 & 7 & 3 \end{vmatrix}$$

2. Hitunglah determinan matriks berikut dengan mereduksi matriks tersebut pada bentuk eselon baris.

$$\text{a. } A = \begin{bmatrix} 2 & 3 & 7 \\ 0 & 0 & -3 \\ 1 & -2 & 7 \end{bmatrix}$$

$$\text{b. } B = \begin{bmatrix} 1 & -2 & 0 \\ -3 & 5 & 1 \\ 4 & -3 & 2 \end{bmatrix}$$

$$\text{c. } C = \begin{bmatrix} 3 & 6 & 9 & 3 \\ -1 & 0 & 1 & 0 \\ 1 & 3 & 2 & -1 \\ -1 & -2 & -2 & 1 \end{bmatrix}$$

$$\text{c. } D = \begin{bmatrix} \frac{1}{2} & \frac{1}{2} & 1 & \frac{1}{2} \\ -\frac{1}{2} & \frac{1}{2} & 0 & \frac{1}{2} \\ \frac{2}{3} & \frac{1}{3} & \frac{1}{3} & 0 \\ \frac{1}{3} & 1 & \frac{1}{3} & 0 \end{bmatrix}$$

3. Misal $\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} = 5$, carilah

$$\text{a. } \begin{vmatrix} d & e & f \\ g & h & i \\ a & b & c \end{vmatrix}$$

$$\text{b. } \begin{vmatrix} -a & -b & -c \\ 2d & 2e & 2f \\ -g & -h & -i \end{vmatrix}$$

$$\text{c. } \begin{vmatrix} a+d & b+e & c+f \\ d & e & f \\ g & h & i \end{vmatrix}$$

$$\text{d. } \begin{vmatrix} a & b & c \\ d-3a & e-3b & f-3c \\ 2g & 2h & 2i \end{vmatrix}$$

4. gunakan reduksi baris utk memperlihatkan bahwa $\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (b-a)(c-a)(c-b)$

5. Tentukan nilai x sehingga $\det(A) = 0$

$$\text{a. } \begin{bmatrix} (x-1) & -2 \\ 1 & (x-4) \end{bmatrix}$$

$$\text{b. } A = \begin{bmatrix} x^2 & x & 2 \\ 2 & 1 & 1 \\ 0 & 0 & -5 \end{bmatrix}$$