Nama: Andri Firman Saputra UAS

NIM : 2010111402125 Aljabar Linear

1. $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 2 & 5 \end{bmatrix}$

a. matrius eselon baris

$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 2 & 5 \end{bmatrix}$ B2. $\frac{1}{4}$ $\begin{bmatrix} 1 & 2 & 3 \\ 1 & \frac{5}{4} & \frac{3}{2} \\ 7 & 2 & 5 \end{bmatrix}$

B3. $\frac{1}{7}$ $\begin{bmatrix} 1 & 2 & 3 \\ 1 & \frac{5}{4} & \frac{3}{2} \\ 1 & \frac{2}{7} & \frac{5}{7} \end{bmatrix}$

B2 - B1 $\begin{bmatrix} 1 & 2 & 3 \\ 0 & -\frac{3}{4} & -\frac{3}{2} \\ 1 & \frac{2}{7} & \frac{5}{7} \end{bmatrix}$

B3 - B1 $\begin{bmatrix} 1 & 2 & 3 \\ 0 & -\frac{3}{4} & -\frac{3}{2} \\ 0 & -\frac{12}{7} & -\frac{16}{7} \end{bmatrix}$

B2. $\frac{-4}{3}$ $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & -\frac{12}{7} & -\frac{16}{7} \end{bmatrix}$

B3. $\frac{-7}{12}$ $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 1 & \frac{4}{3} \end{bmatrix}$

B3 - B2 $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & -\frac{2}{3} \end{bmatrix}$

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$B3, -\frac{3}{2}$ $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}$ //

b. Matriks eselon teredousi

$\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 2 \\ 0 & 0 & 1 \end{bmatrix}$ $B2 - 2.B3$ $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

$B1 - 3.B3$ $\begin{bmatrix} 1 & 2 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

$B1 - 2.B2$ $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ //

C. Rank matriks

Rank matriks = 3 //

karena matriks identitas yg terbentuk

$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$

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2. Nilai determinan dari matriks = $\begin{bmatrix} 1 & 6 & 7 \\ 2 & 5 & 2 \\ 3 & 4 & 5 \end{bmatrix}$

$\det(A) = |A| = \begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} \begin{matrix} a & b \\ d & e \\ g & h \end{matrix}$

$|A| = (a.e.i) + (b.f.g) + (c.d.h) - (c.e.g) - (a.f.h) - (b.d.i)$

$A = \begin{bmatrix} 1 & 6 & 7 \\ 2 & 5 & 2 \\ 3 & 4 & 5 \end{bmatrix} \begin{matrix} 1 & 6 \\ 2 & 5 \\ 3 & 4 \end{matrix}$

$|A| = (1.5.5) + (6.2.3) + (7.2.4) - (7.5.3) - (1.2.4) - (6.2.5)$

$= 25 + 36 + 56 - 105 - 8 - 60$

$= -56$ //

3. $A = \begin{bmatrix} 1 & 2 & 3 \\ 6 & 5 & 4 \\ 7 & 2 & 5 \end{bmatrix}$

a. minor matriks A

$M_{11} = \begin{bmatrix} 5 & 4 \\ 2 & 5 \end{bmatrix} = 5.5 - 4.2 = 17$

$M_{12} = \begin{bmatrix} 6 & 4 \\ 7 & 5 \end{bmatrix} = 6.5 - 4.7 = 2$

$M_{13} = \begin{bmatrix} 6 & 5 \\ 7 & 2 \end{bmatrix} = 6.2 - 5.7 = -23$

$M_{21} = \begin{bmatrix} 2 & 3 \\ 2 & 5 \end{bmatrix} = 2.5 - 3.2 = 4$

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$M22 = \begin{bmatrix} 1 & 3 \\ 7 & 5 \end{bmatrix} = 1.5 - 3.7 = -16$

$M23 = \begin{bmatrix} 1 & 2 \\ 7 & 2 \end{bmatrix} = 1.2 - 2.7 = -12$

$M31 = \begin{bmatrix} 2 & 3 \\ 5 & 4 \end{bmatrix} = 2.4 - 3.5 = -7$

$M32 = \begin{bmatrix} 1 & 3 \\ 6 & 4 \end{bmatrix} = 1.4 - 3.6 = -14$

$M33 = \begin{bmatrix} 1 & 2 \\ 6 & 5 \end{bmatrix} = 1.5 - 2.6 = -7$

Minor dari matriks $A = \begin{bmatrix} 17 & 2 & -23 \\ 4 & -16 & -12 \\ -7 & -14 & -7 \end{bmatrix}$ //

6. Kofaktor dari matriks A

$\begin{bmatrix} + & - & + \\ - & + & - \\ + & - & + \end{bmatrix} \begin{bmatrix} 17 & -2 & -23 \\ -4 & -16 & 12 \\ -7 & 14 & -7 \end{bmatrix}$ //

C. Ekspansi Baris ke-3

$1 \times a31 \times M31 = 1 \times 7 \times -7 = -49$

$-1 \times a32 \times M32 = -1 \times 2 \times -14 = 28$

$1 \times a33 \times M33 = 1 \times 5 \times -7 = -35$

$det(A) = -49 + 28 + (-35) = -56$ //

Ekspansi kolom ke-3

$1 \times a13 \times M13 = 1 \times 3 \times -23 = -69$

$-1 \times a23 \times M23 = -1 \times 4 \times -12 = 48$

$1 \times a33 \times M33 = 1 \times 5 \times -7 = -35$

$det(A) = -69 + 48 + (-35) = -56$ //

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4. $C = \begin{bmatrix} 1 & 2 \\ 2 & 5 \end{bmatrix}$

a. Adjoin matrik C $\begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$

$= \begin{bmatrix} 5 & -2 \\ -2 & 1 \end{bmatrix}$ //

b. Invers matrik C

$= \left[\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 2 & 5 & 0 & 1 \end{array}\right]$

$= \left[\begin{array}{cc|cc} 1 & 2 & 1 & 0 \\ 0 & 1 & -2 & 1 \end{array}\right]$

$= \left[\begin{array}{cc|cc} 1 & 0 & 5 & -2 \\ 0 & 1 & -2 & 1 \end{array}\right]$

$= \begin{bmatrix} 5 & -2 \\ -2 & 1 \end{bmatrix}$ //

5. $2x - 5y + 3z = -10$
$3x + 4y + 7z = -11$
$5x + 3y + 7z = -8$
Nilai dari $x + y + z = 0$

Eliminasi persamaan 2 dan 1

$3x + 4y + 7z = -11 \mid \times 2 \mid 6x + 8y + 14z = -22$
$2x - 5y + 3z = -10 \mid \times 3 \mid 6x - 15y + 9z = -30 -$

Persamaan 4 $= 23y + 5z = 8$

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Eliminasi Persamaan 1 dan 3

$2x - 5y + 3z = -10 \mid \times 5 \mid 10x - 25y + 15z = -50$

$5x + 3y + 7z = -8 \mid \times 2 \mid 10x + 6y + 14z = -16$ −

Persamaan 5 = $-31y + z = -34$

Eliminasi Persamaan 4 dan 5

$23y + 5z = 8 \mid \times 1 \mid 23y + 5z = 8$

$-31y + z = -34 \mid \times 5 \mid -155y + 5z = -170$ −

$178y = 178$

$y = 1$ //

Subtitusi y ke Persamaan 4

$23y + 5z = 8$

$23(1) + 5z = 8$

$23 + 5z = 8$

$5z = 8 - 23$

$5z = -15$

$z = \frac{-15}{5}$

$z = -3$ //

Subtitusikan y dan z ke persamaan 1

$2x - 5y + 3z = -10$

$2x - 5(1) + 3(-3) = -10$

$2x - 5 + (-9) = -10$

$2x = -10 + 5 + 9$

$2x = 4$

$x = 2$ //

Nilai $x + y + z = 2 + 1 + (-3) = 0$ //

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6. Buktikan fungsi vektor merupakan transformasi linear

$F: R^2 \to R^3$ dengan $F\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2x+3y \\ x^2 \\ x+2y \end{bmatrix}$

Misal $u, v \in R^2$
$u = (u1, u2)$
$v = (v1, v2)$
$k$ = skalar

Syarat 1

$$f(u+v) = F(u) + F(v)$$

Ruas kiri

$$F(u+v) = F\left(\begin{bmatrix} u1 \\ u2 \end{bmatrix} + \begin{bmatrix} v1 \\ v2 \end{bmatrix}\right)$$
$$= F\left(\begin{bmatrix} u1+v1 \\ u2+v2 \end{bmatrix}\right)$$

masukkan ke persamaan

$$F\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2x+3y \\ x^2 \\ x+2y \end{bmatrix} = \begin{bmatrix} 2(u1+v1)+3\cdot(u2+v2) \\ (u1+v1)\cdot(u1+v1) \\ (u1+v1)+2(u2+v2) \end{bmatrix}$$

Ruas kanan

$$F(u)+F(v) = \begin{bmatrix} 2u1+3.u2 \\ u1 \cdot u1 \\ u1+2u2 \end{bmatrix} + \begin{bmatrix} 2v1+3v2 \\ v1 \cdot v1 \\ v1+2v2 \end{bmatrix}$$

$$= \begin{bmatrix} 2.u1+3.u2+2.v1+3v2 \\ u_1 \cdot u1 + v_1 \cdot v1 \\ u1+2.u2+v_1+2.v2 \end{bmatrix}$$

$$= \begin{bmatrix} 2(u1+v1)+3(u2+v2) \\ (u1+v1)\cdot(u1+v1) \\ (u1+v1)+2(u2+v2) \end{bmatrix}$$

karena ruas kiri dan kanan sama maka termasuk transformasi linear

syarat 2

$$F(kU) = k.F(U)$$

ruas kiri

$$F(kU) = F\left(k\begin{bmatrix} U1 \\ U2 \end{bmatrix}\right) = F\begin{bmatrix} k.U1 \\ k.U2 \end{bmatrix}$$

masukkan ke persamaan

$$F\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 2x+3y \\ x^2 \\ x+2y \end{bmatrix} = \begin{bmatrix} 2(k.U1)+3(k.U2) \\ (k.U1)\,(k.U1) \\ k.U1 + 2(k.U2) \end{bmatrix}$$

ruas kanan

$$k.f(U) = k.\begin{bmatrix} 2x+3y \\ x^2 \\ x+2y \end{bmatrix} = \begin{bmatrix} 2U1+3U2 \\ U1.U1 \\ U1+2U2 \end{bmatrix}$$

$$= \begin{bmatrix} 2(k.U1)+3.(k.U2) \\ (k.U1).(k.U1) \\ k.U1 + 2(k.U2) \end{bmatrix}$$

karena ruas kiri dan kanan sama maka termasuk transformasi linear.

# UNIVERSITAS PAMULANG
# KARTU UJIAN AKHIR SEMESTER GANJIL 2021/2022
# NOMOR UJIAN : 830843514684

FAKULTAS / PRODI : TEKNIK / TEKNIK INFORMATIKA S1

NAMA MAHASISWA : ANDRI FIRMAN SAPUTRA

NIM : 201011402125

SHIFT : REGULER A

| No | Hari/ Tanggal | Waktu | Ruang | Kelas | Mata Kuliah | Paraf |
|---|---|---|---|---|---|---|
| 1 | - | | | 03TPLP016 | STRUKTUR DATA | 1 |
| 2 | - | | | 03TPLP016 | MATEMATIKA DISKRIT | 2 |
| 3 | - | | | 03TPLP016 | ALJABAR LINIER DAN MATRIKS | 3 |
| 4 | - | | | 03TPLP016 | STATISTIK DASAR | 4 |
| 5 | - | | | 03TPLP016 | GRAPH TERAPAN | 5 |
| 6 | - | | | 03TPLP016 | PRAKTIKUM FISIKA II | 6 |
| 7 | - | | | 03TPLP016 | BAHASA INGGRIS III | 7 |
| 8 | - | | | 03TPLP016 | JARINGAN KOMPUTER | 8 |
| 9 | - | | | 03TPLP016 | SISTEM BERKAS | 9 |

**Peraturan dan Tata Tertib Peserta Ujian**

1. Peserta ujian harus berpakaian rapi, sopan dan memakai jaket Almamater
2. Peserta ujian sudah berada di ruangan sepuluh menit sebelum ujian dimulai
3. Peserta ujian yang terlambat diperkenankan mengikuti ujian setelah mendapat ijin, tanpa perpanjangan waktu
4. Peserta ujian hanya diperkenankan membawa alat-alat yang ditentukan oleh panitia ujian
5. Peserta ujian dilarang membantu teman, mencontoh dari teman dan tindakan-tindakan lainnya yang mengganggu peserta ujian lain
6. Peserta ujian yang melanggar tata tertib ujian dikenakan sanksi akademik

Tangerang Selatan, 1 Januari 2022
Ketua Panitia Ujian

**UBAID AL FARUQ, S.Pd., M. Pd**
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# UNIVERSITAS PAMULANG
# DATA PEMBAYARAN SEMESTER GANJIL 2021/2022

FAKULTAS / PRODI : TEKNIK / TEKNIK INFORMATIKA S1

NAMA MAHASISWA : ANDRI FIRMAN SAPUTRA

NIM : 201011402125

SHIFT : REGULER A

## DATA PEMBAYARAN TAGIHAN UANG KULIAH

| NO | NOMOR TAGIHAN | NO URUT | PEMBAYARAN | JML BAYAR | STATUS BAYAR | TGL BAYAR | CHANNEL | TEMPAT BAYAR |
|---|---|---|---|---|---|---|---|---|
| 1 | 2110119141902201 | 1 | REGISTRASI | 400000 | LUNAS | 2021-08-13 13:24:24.306000 | KASIR | BPR |
| 2 | 2110119141902301 | 2 | ANGSURAN KE-2 | 200000 | LUNAS | 2021-08-13 13:24:25.285000 | KASIR | BPR |
| 3 | 2110119141902401 | 3 | ANGSURAN KE-3 | 200000 | LUNAS | 2021-08-13 13:24:26.287000 | KASIR | BPR |
| 4 | 2110119141900501 | 4 | UTS | 250000 | LUNAS | 2021-08-13 13:24:27.790000 | KASIR | BPR |
| 5 | 2110119141902501 | 5 | ANGSURAN KE-4 | 200000 | LUNAS | 2021-12-15 13:21:56.721000 | KASIR | BPR |
| 6 | 2110119141902601 | 6 | ANGSURAN KE-5 | 200000 | LUNAS | 2021-12-15 13:21:57.174000 | KASIR | BPR |
| 7 | 2110119141902701 | 7 | ANGSURAN KE-6 | 200000 | LUNAS | 2021-12-15 13:21:57.487000 | KASIR | BPR |
| 8 | 2110119141900401 | 8 | PRAKTEK | 100000 | LUNAS | 2021-12-15 13:21:57.924000 | KASIR | BPR |
| 9 | 2110119141900601 | 9 | UAS | 250000 | LUNAS | 2021-12-15 13:21:58.409000 | KASIR | BPR |

## DATA PEMBAYARAN TAGIHAN LAINNYA

| NO | NOMOR TAGIHAN | NO URUT | PEMBAYARAN | JML BAYAR | STATUS BAYAR | TGL BAYAR | CHANNEL | TEMPAT BAYAR |
|---|---|---|---|---|---|---|---|---|