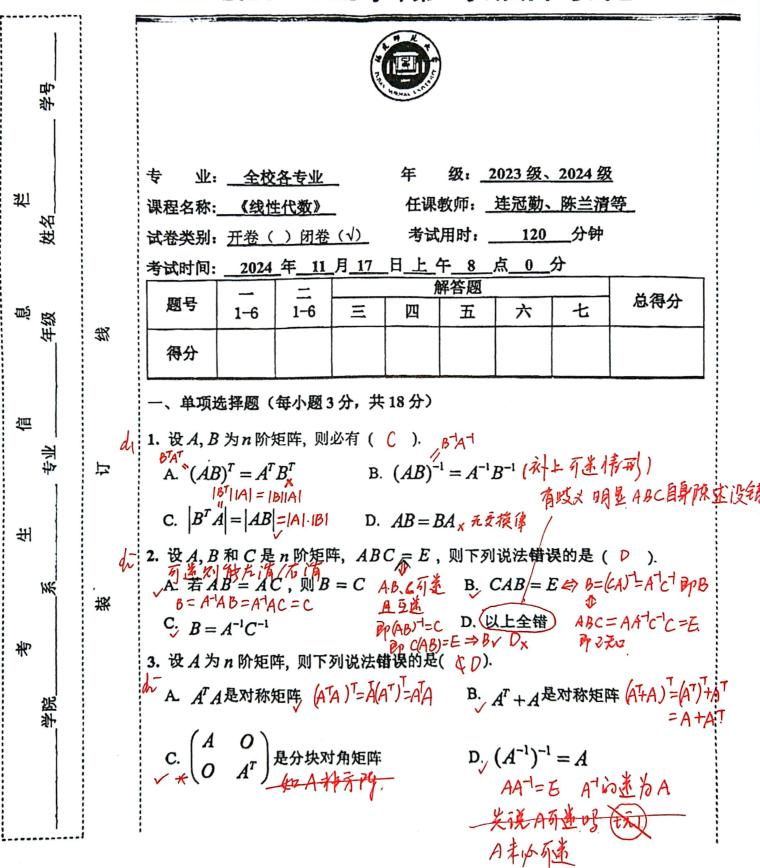
## 福建师范大学数学与统计学院

2024 — 2025 学年第一学期期中考试卷



福建师范大学试卷纸

共4页,第1页

## 左右等价,但不到等价 如 ( ° ° ) ( ° ° ) ( ° ° ) 左中等何,但不行等行

MA. A与B行等价

B. A与B列等价

c. R(A) = R(B)

D. |A| = |B|

; 下列矩阵中秩为2的是( <sup>8</sup>).

A. 
$$\begin{pmatrix} 1 \\ -3 \end{pmatrix} \begin{pmatrix} 2 \\ -6 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 3 \end{pmatrix} \begin{pmatrix} 1/2 \\ 3 \end{pmatrix} \begin{pmatrix} 1/2 \\ 3 \end{pmatrix} \begin{pmatrix} 1/2 \\ 3/2 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 0/3 \\ 0/3 \\ 0/3 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 0/3 \\ 0/3 \\ 0/3 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 0/3 \\ 0/3 \\ 0/3 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 0/3 \\ 0/3 \\ 0/3 \\ 0/3 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 0/3 \\ 0/3 \\ 0/3 \\ 0/3 \end{pmatrix} \rightarrow \begin{pmatrix} 1/2 \\ 0/3$$

c. 
$$\begin{pmatrix} 2 & 2 & 0 \\ -1 & 0 & 0 \\ 0 & 0 & 3 \end{pmatrix}$$
  $\begin{vmatrix} 1 & b & b \\ 1 & 2 & 0 \\ 0 & 0 & 3 \end{vmatrix}$   $\Rightarrow 0$ .  $\begin{pmatrix} 1 \\ 3 \\ 0 \end{pmatrix}$ 

D. 
$$\begin{pmatrix} 1 \\ 3 \\ 0 \end{pmatrix}$$

OR(A) ≠ R(A b) 6. 设非齐次线性方程组 $A_{m\times n}x = b$  无解,则( A. 齐次线性方程组 Ax = 0 只有零解

R(A)<n(受气扩数)

B. 齐次线性方程组 Ax = 0 必有非零解

C.  $R(A) = R(A,b) \Leftrightarrow Ax \to f_0$ 

D. R(A,b) = R(A) + 1

填空题 (每小题 3 分,共18 分)

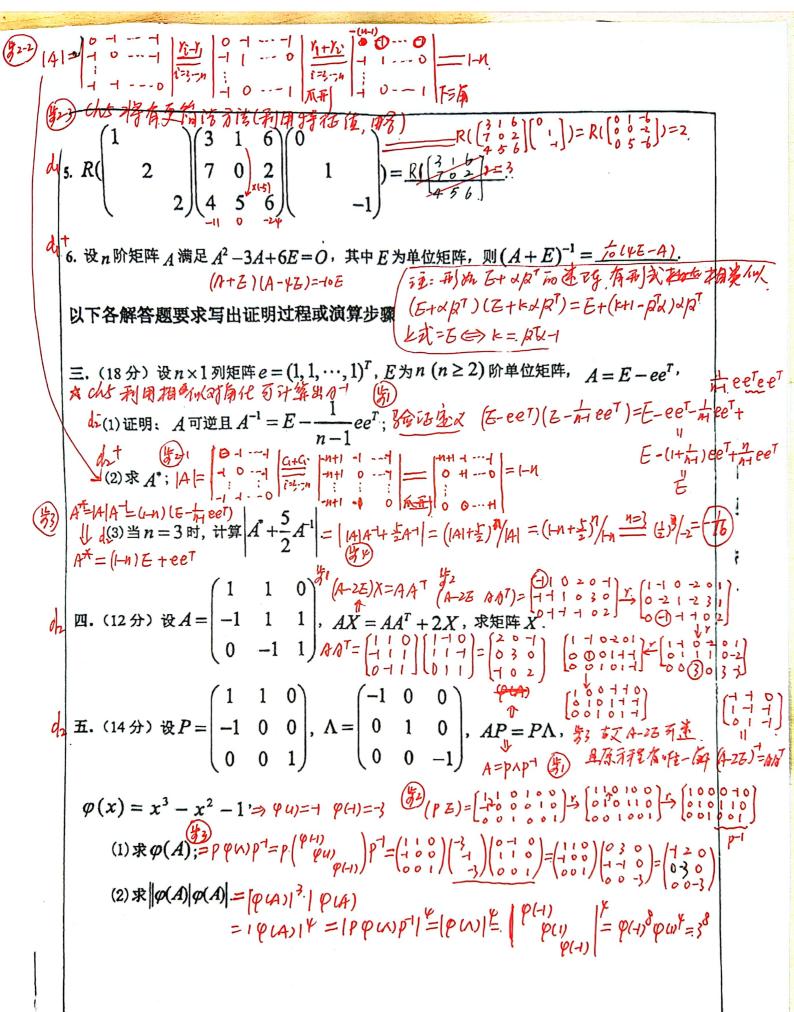
In {21+20=1 → AX {21+20=1 → BX

$$x$$
 -x 2x 1  $= f(x)$   $= f(x$ 

2. 设 A 为  $n(n \ge 2)$  阶方阵且 |A| = 3,则 |A + E(1,2(3))A| = |A|E + E(1,2(3))|=|A|

は 
$$\begin{pmatrix} 1 & -1 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix}$$
  $A\begin{pmatrix} 3 \\ 1 \\ 0 & 0 & 1 \end{pmatrix}$ 

4. 设行列式 
$$D = \begin{vmatrix} -9 & 6 & 4 & 0 \\ 3 & 1 & -1 & 1 \\ 1 & 8 & -2 & 0 \\ 0 & 2 & 0 & 3 \end{vmatrix}$$
, 则  $3A_{31} + A_{32} - A_{33} + A_{34} = \underbrace{\phantom{A_{33} + A_{34} = 0}}_{3 \times 2^{n}}$ 



## 六.(12分)利用矩阵的初等变换求解线性方程组

$$\begin{cases} x_1 - x_2 - 4x_3 - 3x_4 = -4 \\ 2x_1 + x_2 - 2x_3 - 2x_4 = 1. & \text{if } Ax > b, \\ x_1 + 2x_2 + 2x_3 + x_4 = 5 \end{cases}$$

七. (8分) 设 阶矩阵 A满足 
$$A^2 - 3A + 2E = O$$
, 证明:  $R(A - 2E) + R(A - E) = n$ .

$$(A - 2E) (A - E) = O$$

$$R(A - 2E) - (A - E) = O$$

$$R(A - 2E) - (A - E) = O$$

$$R(A - 2E) + R(A - E) = O$$

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第7届年前日間間子 524=〒+223+5次24 22=3-223-5324

第2-3(港社解系方首法)

全力のスタン(学月=(次一次01)でかかなのである。

心透梅物

Sotter Pitterfor, to kee 6R