

Review Session for Test 2, 10/26

$$\det(AB) = \det(A) \cdot \det(B)$$

$$\det(A^4 B^2) = (\det(A))^4 (\det(B))^2$$

$$\begin{aligned}\det(AB)^{-1} &= \frac{1}{\det(AB)} = \frac{1}{\det(A) \cdot \det(B)} \\ &= \frac{1}{-2} = -0.5 \\ &= -\frac{1}{2} \\ &= -.5\end{aligned}$$

$$\det(kA) = k^n \det(A)$$

linear equations

$Ax = b \rightarrow \text{special case } Ax = \vec{0}$

$\left\{ \begin{array}{l} \text{pivot columns} \\ \text{non-pivot} \end{array} \right\}$ $\left\{ \begin{array}{l} \text{echelon form} \\ \text{reduced echelon form} \end{array} \right.$

$\# \text{ pivots} = \# \text{ basic variables}$

$\# \text{ non-pivot columns} = \# \text{ free variables}$

$\dim(\text{span})$

$\dim(\text{col}(A))$

$\text{rank}(A) = r$

$\dim(\text{row}(A))$

$\text{rank}(A^T)$

$\dim(\text{null}(A)) =$ all solutions to $Ax = \vec{0}$

$A = (v_1, v_2, \dots, v_n)$

$x_1 v_1 + x_2 v_2 + \dots + x_n v_n = \vec{0}$

$A_{5 \times 7}$

$A^T_{7 \times 5}$

$\begin{bmatrix} 1 & - & - & - & - & - & - \\ 0 & 0 & 1 & - & - & - & - \\ 0 & 0 & 0 & 2 & - & - & - \\ 0 & 0 & 0 & 0 & - & - & 0 \\ 0 & 0 & 0 & 0 & 0 & 0 & 0 \end{bmatrix}$

$$\#19. [x]_B \longrightarrow [x]_C$$

$$[x]_C = ? [x]_B$$

$$\underline{M_C^{-1} \cdot M_B}$$

$$\begin{array}{c} P_{B \rightarrow C} \\ \hline M_C^{-1} \cdot M_B \end{array}$$

$$\#20 (a) [x] \quad \underline{\underline{B}} = \{ \quad \} \rightarrow M_B$$

$$[x]_B = \underline{M_B^{-1}} \cdot \underline{[x]}$$

$$(b) P_{F_2 \leftarrow F_1} = P_{F_1 \rightarrow \underline{F_2}}$$

$$M_{F_2}^{-1} M_{F_1}$$

math \rightarrow matrix \rightarrow

$$\underline{[A] \Lambda^{-1} [B]}$$

$$\det(\bar{A}^{-1} B^2) = \frac{(\det(B))^2}{\det(A)}$$

$$(A^k)^{-1} = (\bar{A}^{-1})^k \cdot A^k$$

$$\bar{A}^{-1} \cdot A = \underline{I}$$

$$\underbrace{\bar{A}^{-1} \cdot \bar{A}^{-1} \cdots \bar{A}^{-1} \cdot A \cdot A \cdots A}_{\bar{A}^{-1} \cdot \bar{A}^{-1} \cdots \bar{A}^{-1} \cdot A \cdot A \cdots A}$$

$$(\bar{A}^{-1} \cdot \bar{A}^{-1}) \cdot (A \cdot A) = \bar{A}^{-1} \cdot \underline{I} \cdot A = \bar{A}^{-1} \cdot A = \underline{I}$$

$$(\bar{A}^{-1})^2 = (A^2)^{-1}$$

$$(AB)^{-1} = \underline{B^{-1} \bar{A}^{-1}} \quad \underline{\bar{B}^{-1} \bar{A}^{-1} \cdot AB = I}$$

$$(\bar{A} \bar{B})^{-1} = \bar{A}^{-1} \bar{B}^{-1} \quad \text{X}$$

$$(\kappa B)^{-1} = \underline{\frac{1}{\kappa}} \cdot B^{-1} \cdot \underline{\frac{\bar{A}^{-1} \bar{B}^{-1} \cdot AB}{\kappa B}}$$

Quiz 1 : D