Thich set is a basis for
$$\mathbb{R}^4$$
?

A) $\begin{pmatrix} 1 \\ 2 \\ 3 \\ 4 \end{pmatrix}$, $\begin{pmatrix} 1 \\ 1 \\ 0 \end{pmatrix}$, $\begin{pmatrix} 0 \\ 1 \\ 1 \end{pmatrix}$

B) $\begin{pmatrix} 1 \\ 2 \\ 0 \\ 0 \end{pmatrix}$, $\begin{pmatrix} 2 \\ 0 \\ 1 \\ 0 \end{pmatrix}$, $\begin{pmatrix} 4 \\ 3 \\ 2 \\ 10 \\ 1 \end{pmatrix}$, $\begin{pmatrix} 9 \\ 10 \\ 11 \end{pmatrix}$

$$\begin{pmatrix} 1 \\ 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 2 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 \\ 2 \\ 1 \\ 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 3 \\ 1 \\ 1 \\ 0 \\ 0 \\ 1 \end{pmatrix}$$

Which set is a basis for space of matrices 2×2 ?

(2) A) (23), (20), (20) B) (20), (01), (00), (10), (01), (00), (01), (00), (01), (00), (01), (00), (01),

C)
$$\begin{pmatrix} 2 & 0 \\ 2 & 0 \end{pmatrix}$$
, $\begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}$, $\begin{pmatrix} 0 & 3 \\ 0 & 3 \end{pmatrix}$, $\begin{pmatrix} 0 & 1 \\ 0 & 1 \end{pmatrix}$ D) none of above

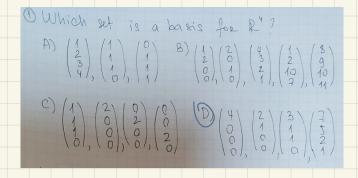
D) $\begin{pmatrix} 1 & 0 \\ 0 & 1 \end{pmatrix}$, $\begin{pmatrix} 0 & 0 \\ 1 & 0 \end{pmatrix}$, $\begin{pmatrix} 0 & 1 \\ 1 & 0 \end{pmatrix}$ is a basis for space of all matrices 2×2 with $T_{R} = 0$.

Which pair is Null and Column Spaces for matrix
$$A = \begin{pmatrix} 1 & 0 & 2 & 0 \\ 0 & -1 & 1 & 0 \\ 0 & 0 & 3 & 6 \end{pmatrix}.$$

$$B) N(A) = \langle \begin{pmatrix} 1 \\ 0 \end{pmatrix} \rangle, C(A) = \mathbb{R}^3$$

$$C) N(A) = \langle \begin{pmatrix} 2 \\ -2 \\ 2 \end{pmatrix}, \begin{pmatrix} 3 \\ 4 \\ 4 \end{pmatrix} \rangle, C(A) = \mathbb{R}^3$$

D)
$$N(A) = \left(\begin{pmatrix} 4 \\ 2 \\ -2 \\ 2 \end{pmatrix}\right)$$
, $C(A) = \mathbb{R}^3$



Which set is a basis for space of matrices 2×2? C) (20) (10), (03), (01) D) none of above

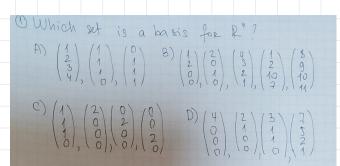
A) 1, 1+t, t2 is a basis for P, [t] B) 1+2, 2, 2 is a basis for Ps[t] F, cant be zero C) tot2, t2 t3 is a basis for space of polyholomials of degree 3 with root 0. F. C+ Xt

D) (10), (00), (00) is a basis for space of all

[c-a] a-a=o ... only 3 element.

: Valid basis

(4) Which pair is Null and Column Spaces for matrix $A = \begin{pmatrix} 1 & 0 & 2 & 0 \\ 0 & -1 & 1 & 0 \\ 0 & 0 & 3 & 6 \end{pmatrix}$, B $N(A) = \begin{pmatrix} 1 & 0 \\ 0 & 3 & 6 \end{pmatrix}$, $C(A) = \mathbb{R}^3$ B) $N(A) = \langle \begin{pmatrix} 1 \\ 0 \end{pmatrix} \rangle$, $C(A) = \mathbb{R}^3$ C) $N(A) = \langle \begin{pmatrix} 2 \\ 2 \\ 2 \end{pmatrix}, \begin{pmatrix} 3 \\ 4 \\ -4 \end{pmatrix} \rangle$, $C(A) = \mathbb{R}^3$ D) $N(A) = \langle \begin{pmatrix} 4 \\ 2 \end{pmatrix} \rangle$, $C(A) = \mathbb{R}^3$



- (3) A) 1, 1+t, t² is a basis for P₂[t]

 B) 1+t, t², t³ is a basis for P₃[t]

 C) t+t², t²t³ is a basis for space of polynomials of degree 3 with root 0.

 D) (1 0), (0 0), (0 1) is a basis for space of all matrices 2×2 with Tr = 0.
- A) $P_2[t] = c + a + b + b^2$ $= c + a(1+t) + b + b^2$ $= c a + a + b + b^2$ $\therefore A \text{ is } + b + b + b^2 + b + b^2$ No $c : B \text{ is } + a + b + b^2 + b + b^2$ $C) (a b) = b + b + b^2$

D)
$$T_{\nu}=0 \Rightarrow \begin{pmatrix} a & b \\ c & -a \end{pmatrix} \Rightarrow R^3$$
 ??

Which set is a basis for space of matrices 2×2 ?

(2) A) $(2 \ 3)$, $(2 \ 0)$, $(2 \ 0)$ (3) $(1 \ 0)$, $(0 \ 1)$, $(0 \ 0)$ (4) $(0 \ 1)$, $(0 \ 0)$ (5) $(2 \ 0)$, $(1 \ 0)$, $(0 \ 3)$, $(0 \ 1)$ D) none of above

2×2 matrices \Rightarrow R⁴ (ab)

A \Rightarrow Only 3 elements \Rightarrow R³ \times B \Rightarrow linear independent did not explain why $\begin{array}{c}
x^{2} \\
(-) (20), (10), (03), (01) \\
(-) (20), (10), (03), (01)
\end{array}$ \Rightarrow linear dependent?? \times

(4) Which pair is Null and Column Spaces for matrix
$$A = \begin{pmatrix} 1 & 0 & 2 & 0 \\ 0 & -1 & 1 & 0 \\ 0 & 0 & 3 & 6 \end{pmatrix}$$
. B) $N(A) = (\begin{pmatrix} 1 \\ 0 \end{pmatrix})$, $C(A) = \mathbb{R}^3$ C) $N(A) = (\begin{pmatrix} 2 \\ -2 \\ 2 \end{pmatrix})$, $C(A) = \mathbb{R}^3$ D) $N(A) = (\begin{pmatrix} 2 \\ -2 \\ 2 \end{pmatrix})$, $C(A) = \mathbb{R}^3$

B)
$$N(A) = R^3 \neq R^4$$
 ... wrong
$$C(A) = R^3 \Rightarrow 3 \text{ rows}$$

$$N(A) = R^4 \Rightarrow 7 \text{ telements } 4 \text{ columns}$$