## 591AA 21/22 – ELENCO DEI PROBLEMI 1

R~ VS IK

## Problema 1. Calcolare

- (a) (1,2,-3)+(2,0,1);
- (b) (2,-1,-1,3) (-1,0,0,2).

$$(1,2,-3)+(2,0,1)=(3,2,-2)$$
 $R'=$  sparie verterale

 $= (x) | x \in IR$  double ati7,

 $(2,-1,-1,3) \neq (-1,0,0,0)$  double  $x;$ 

$$(2,-1,-1,3) + (-1,0)$$

$$= (3,-1,-1,1)$$

**Problema 2.** Trova a, b tali che

 $\frac{1}{2}$   $K_1 = 0 + \frac{b}{2} = \frac{2}{2}$  a(2,1,1) + b(1,1,2) = (4,3,5)

 $R_1$  2a + b = 47 2a + b = 4 0 + b/2 = 1 double at 3?  $R_2$   $C_1 + b = 3$   $R_2 = R_2 - R_1/2$  c + 3b/2 = 3  $1R_3$   $R_3$   $C_4 + 2b = 5$   $R_3 = R_3 - R_1/2$ 

=> 622 , 2a+5=1=> a=1

(aco], any)

Typeset by  $A_{\mathcal{M}}S$ -T<sub>F</sub>X

**Problema 3.** Trova a, b, c tale che:

$$a(1,1,1) + b(0,1,1) + c(0,0,1) = (1,2,3)$$
= (a, a+b, a+b+te) = (1,2,3)

=) a=1

 $a=1$ 
 $a$ 

Problema 4. Risolvere

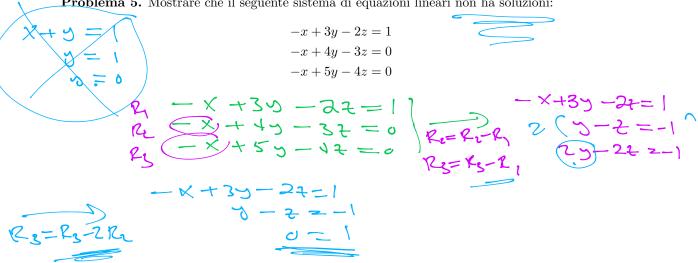
$$x + y + z = 1$$

$$x + 2y + 2z = 0$$

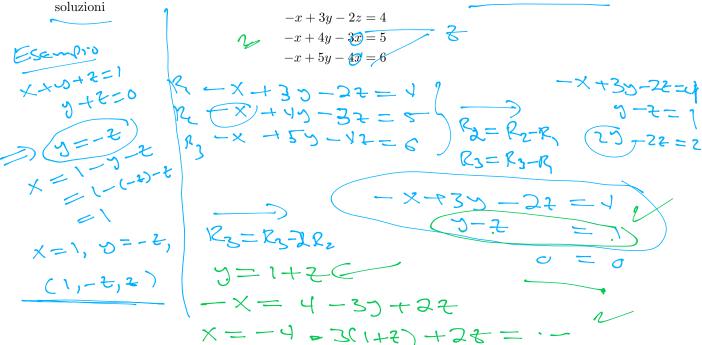
$$x + 3z = 1$$

$$x + 3$$

Problema 5. Mostrare che il seguente sistema di equazioni lineari non ha soluzioni:



Problema 6. Mostrare che il seguente sistema di equazioni lineari ha un numero infinito di



Problema 7. Calcolare

(a)

$$\begin{pmatrix} 1 & -1 \\ 1 & -1 \end{pmatrix} \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix}$$

(b)

$$\begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix} \begin{pmatrix} 1 & -1 \\ 1 & -1 \end{pmatrix}$$

In generale, se A e B sono matrici 2x2, allora AB non è uguale a BA.

$$\begin{pmatrix} 1 & -1 \\ 1 & -1 \end{pmatrix} \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix} \begin{pmatrix} 1 & -1 \\ 1 & 1 \end{pmatrix} = \begin{pmatrix} 2 & -2 \\ 2 & -2 \end{pmatrix}$$

Problema 8.

(a) Calcolare

$$\det\begin{pmatrix} 2 & 3 \\ 5 & 8 \end{pmatrix}$$

Trova 
$$t$$
 tali che 
$$\det\begin{pmatrix} 1 & 2 \\ 3 & t \end{pmatrix} = 0$$

 $\det \begin{pmatrix} 2 & 3 \end{pmatrix} = ad - bn$   $\det \begin{pmatrix} 2 & 3 \end{pmatrix} = (1)(1)$   $\det \begin{pmatrix} 2 & 3 \end{pmatrix}$ 

$$\det\begin{pmatrix} 2 & 3 \\ 5 & 8 \end{pmatrix} \qquad \qquad -2$$

AB = BA

$$\det\begin{pmatrix} 1-t & 2\\ 4 & 8-t \end{pmatrix} = 0$$

(a) 
$$ad(\frac{2}{5}\frac{3}{8}) = (218) - (3)(5) = 1$$

(a) 
$$dx(\frac{2}{5}\frac{3}{8}) = (218) - (3)(5) = 1$$
  
(b)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$   
(c)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$   
(d)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$   
(e)  $dx(\frac{2}{5}\frac{3}{8}) = (218) - (3)(5) = 1$   
(f)  $dx(\frac{2}{5}\frac{3}{8}) = (218) - (3)(5) = 1$   
(g)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$   
(h)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$   
(g)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$   
(h)  $dx(\frac{2}{5}\frac{2}{8}) = (218) - (3)(5) = 1$ 

(c) 
$$\mathcal{M}(\frac{1-x^2}{+8-x}) = (1-x)(8-x) - (2)(4) = 0$$
  
 $\Rightarrow 8-9x+x^2-8=x^2-9x=0$   
 $\Rightarrow x(x-8)=0 \Rightarrow x=0 \Rightarrow x=9$