1.) $\mathbb{F}_2^2 = \{(0,0), (0,1), (1,0), (1,1)\}$

   basis $\to$ linearly independent vectors

$(1,0), (0,1)$

$(1,0), (1,1)$

$(0,1), (1,1)$

$(1,1), (1,0)$

2.)

     $S = \{(1,0,1), (-1,0,1)\}$

     $B = \{(1,0,1), (-1,0,1), (0,1,0)\}$

basis $\to$ linearly independent vectors

W.T.S

     $a(1,0,1) + b(-1,0,1) + c(0,1,0) = (0,0,0)$

show

$a=0, b=0 \ \& \ C=0$

   $a-b=0, \ a=b$

    $C=0$

  $a+b=0 \to a=-b$

      So

        $(a-b, c, a+b) = (0,0,0)$

3.) $S = \{(1,-1,1), (0,1,1)\}$

     $B = \{(1,-1,1), (0,1,1), (0,1,0)\}$

   basis $\to$ linearly independent vectors

     $a(1,0,1) + b(-1,0,1) + c(0,1,0) = (0,0,0)$

$a=0, b=0 \quad C=0$

$$a + c = 0 \;\rightarrow\; c = -a$$
$$-a + b = 0 \;\rightarrow\; b = a$$
$$a + b = 0 \;\rightarrow\; a = -b$$

$$a = b = c = 0$$