Step-1

a) If Ax = b has two solutions x_1 and x_2 , then we have to find two solutions to Ax = 0.

If Ax = b has two solutions x_1 and x_2 then

$$Ax_1 = b$$
 and $Ax_2 = b$

Now consider $A(x_1 - x_2)$

$$=Ax_1-Ax_2$$

- =b-b
- =0

Therefore $x_1 - x_2$ is a solution of Ax = 0

Step-2

If we consider $A(2x_1 - 2x_2)$

$$= 2\left(Ax_1 - Ax_2\right)$$

- =2(b-b)
- = 0

Therefore $2(x_1 - x_2)$ is also a solution of Ax = 0

Step-3

b) We have to find another solution to Ax = b

If we consider

$$A(2x_1 - x_2) = 2Ax_1 - Ax_2$$

$$=2b-b$$

$$=b$$

Therefore
$$A(2x_1 - x_2) = b$$

Hence $2x_1 - x_2$ is another solution of Ax = b