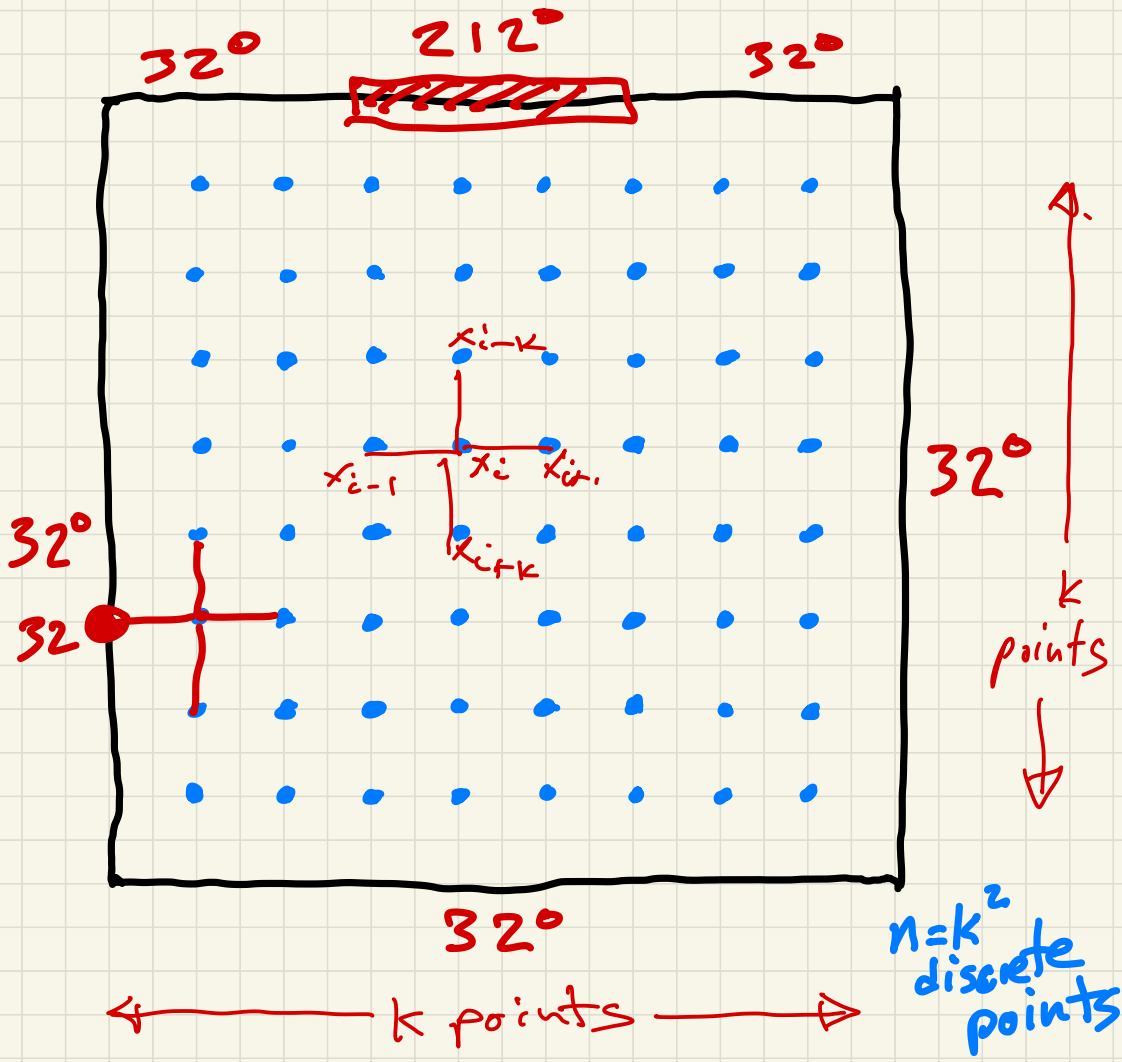
BUILDING THE TEMPERATURE MATRIX

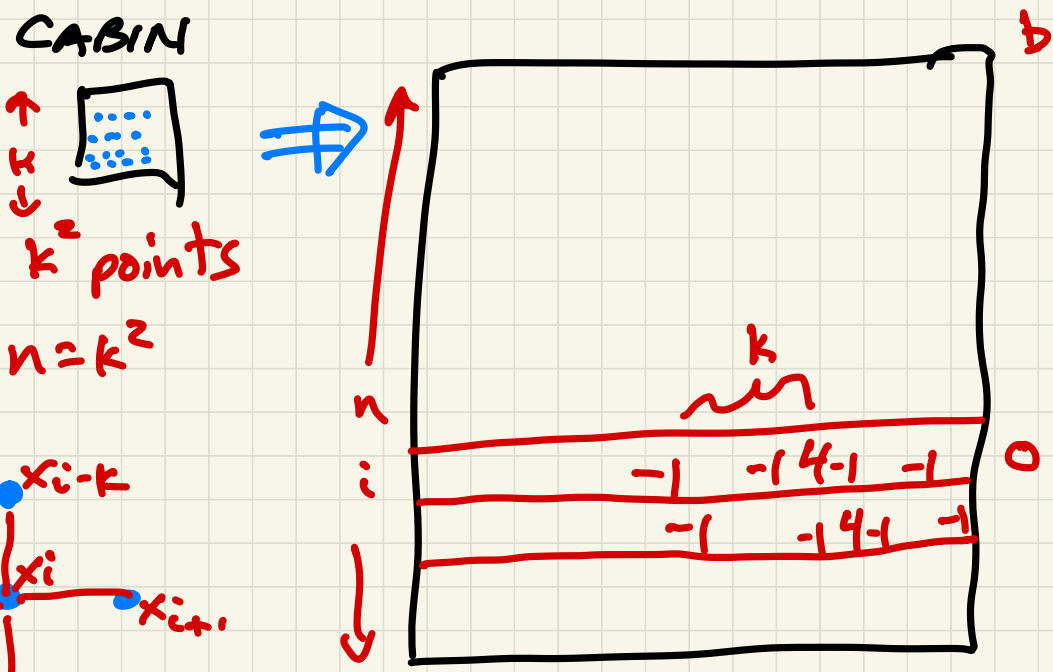
CS 111 Short Subject

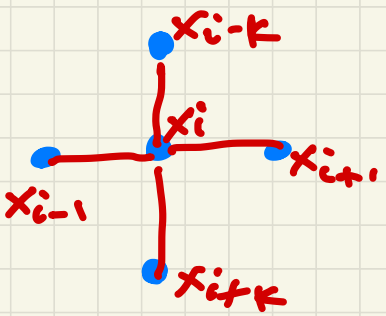
Oct. 13, 2020

A cabin in the snow, all walls at 32°F except for a radiator at 212° F.

We'll do a 2D cabin because it's easier to draw, but 3D is similar.





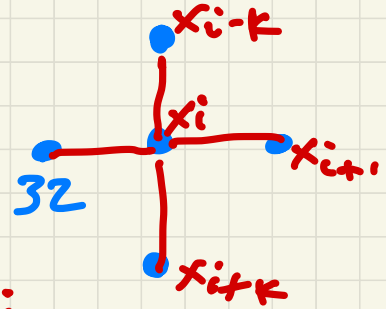


$$x_i = \frac{1}{4}\left(x_{i-k} + x_{i-1} + x_{i+1} + x_{i+k}\right)$$

$$-x_{i-k} - x_{i-1} + 4x_i - x_{i+1} - x_{i+k} = 0$$

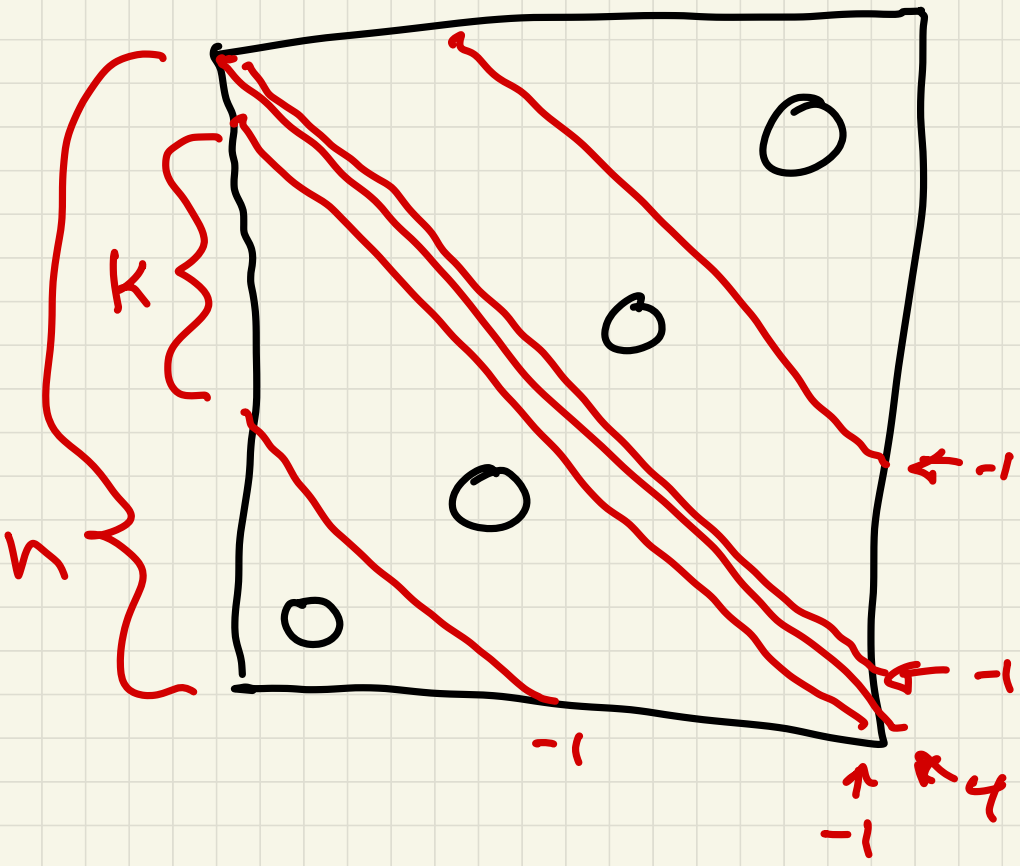
$$\begin{array}{ccccccc} -1 & -1 & 4 & -1 & -1 & | & b_i \end{array}$$

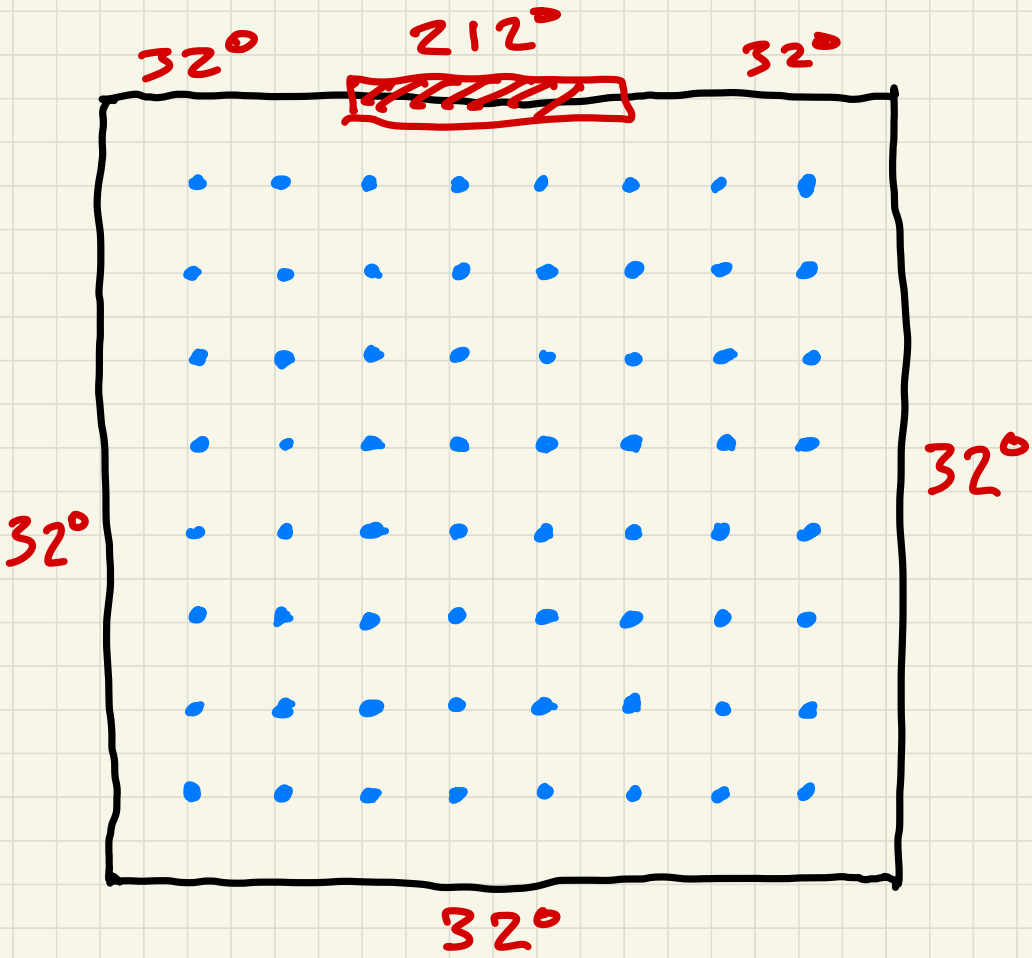
LEFT SIDE OF CABIN:



$$-x_{i-1} + 4x_i - x_{i+1} - x_{i+k} = 32$$

b_i


k
n
-1
-1
-1
-1
4


32°
212°
32°
32°
32°
32°