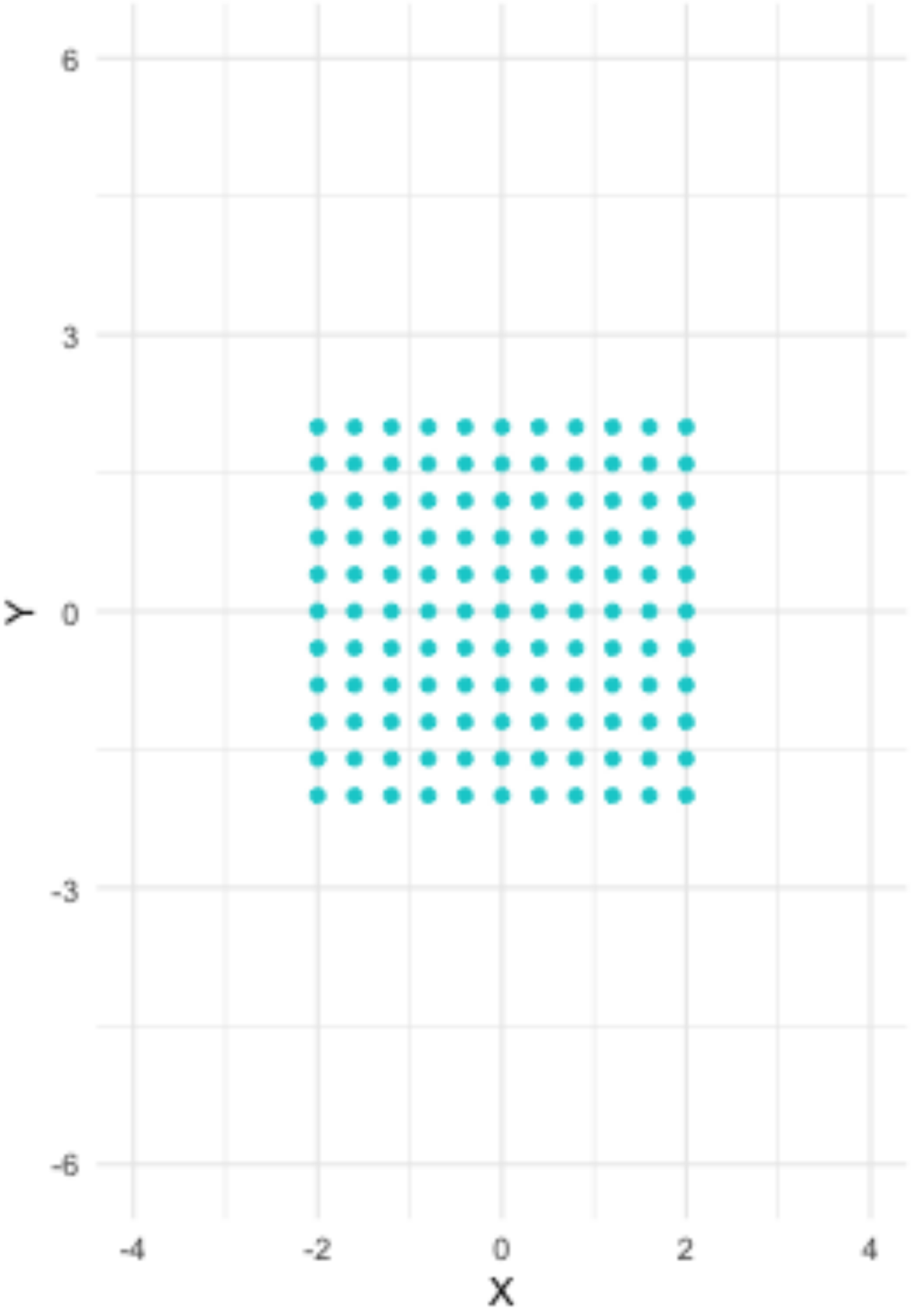
linear and non-linear transformation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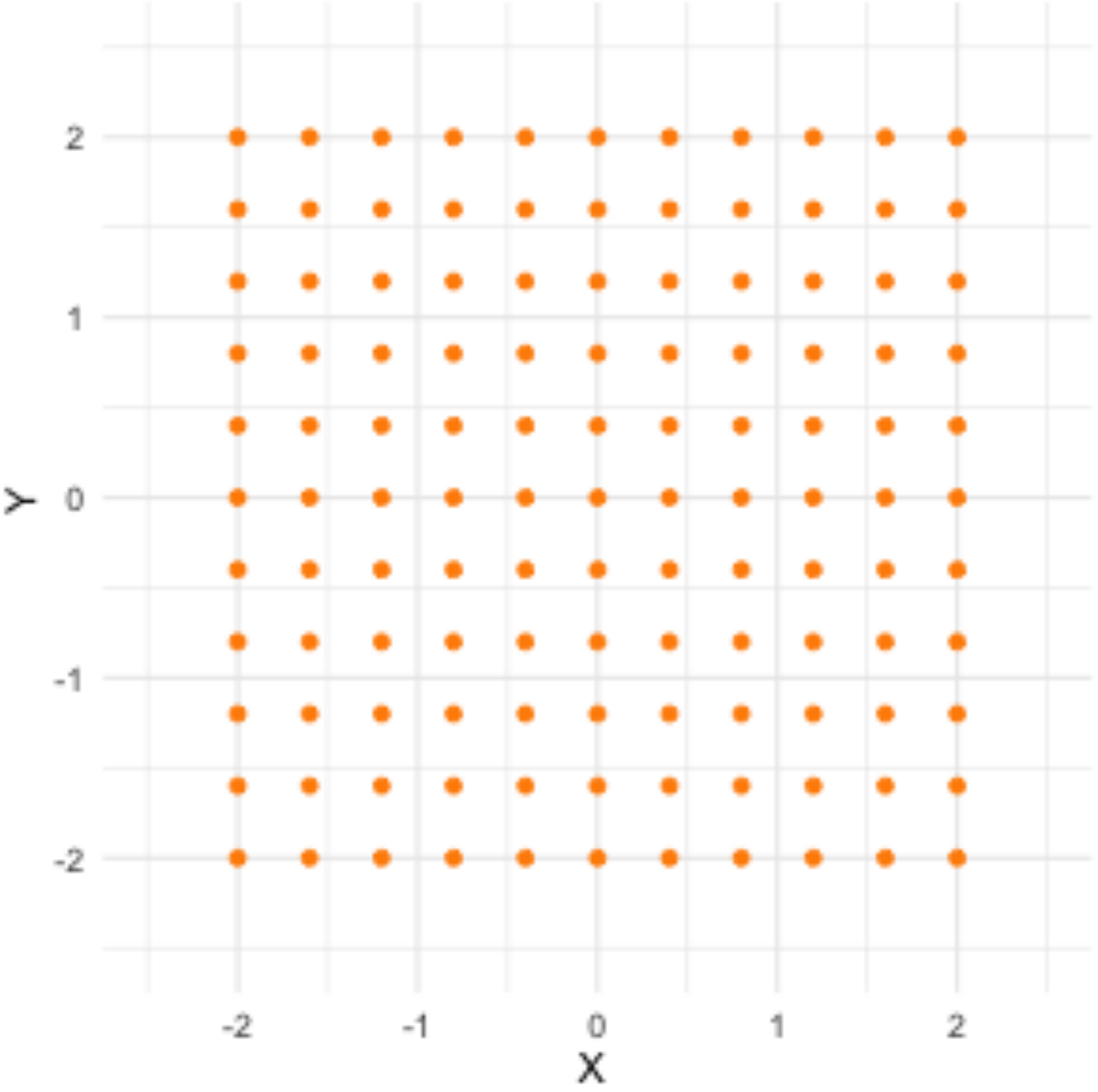
-3
-6
Y
-4
-2
0
2
4
X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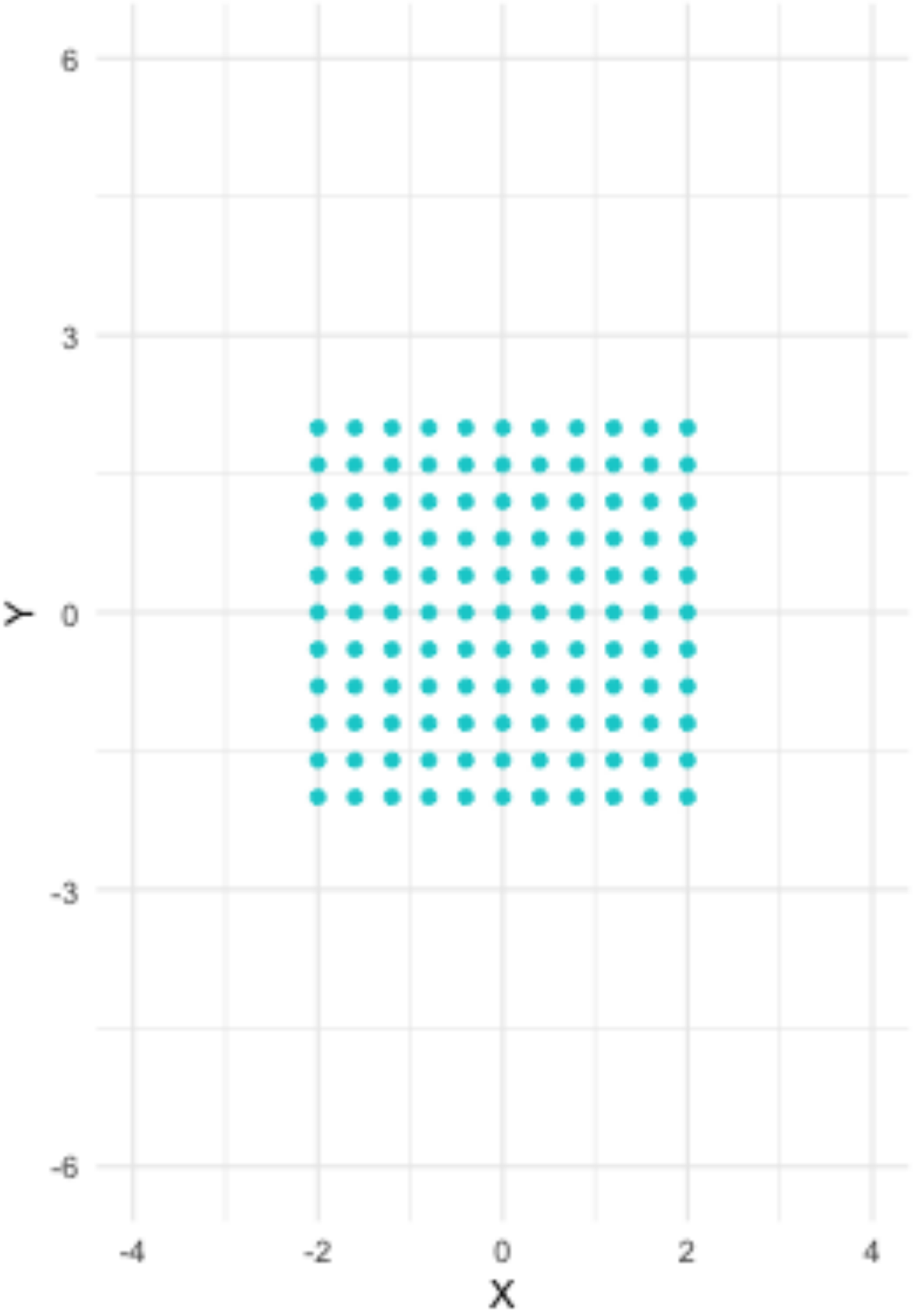
-2
Y
-2
-1
0
1
2
X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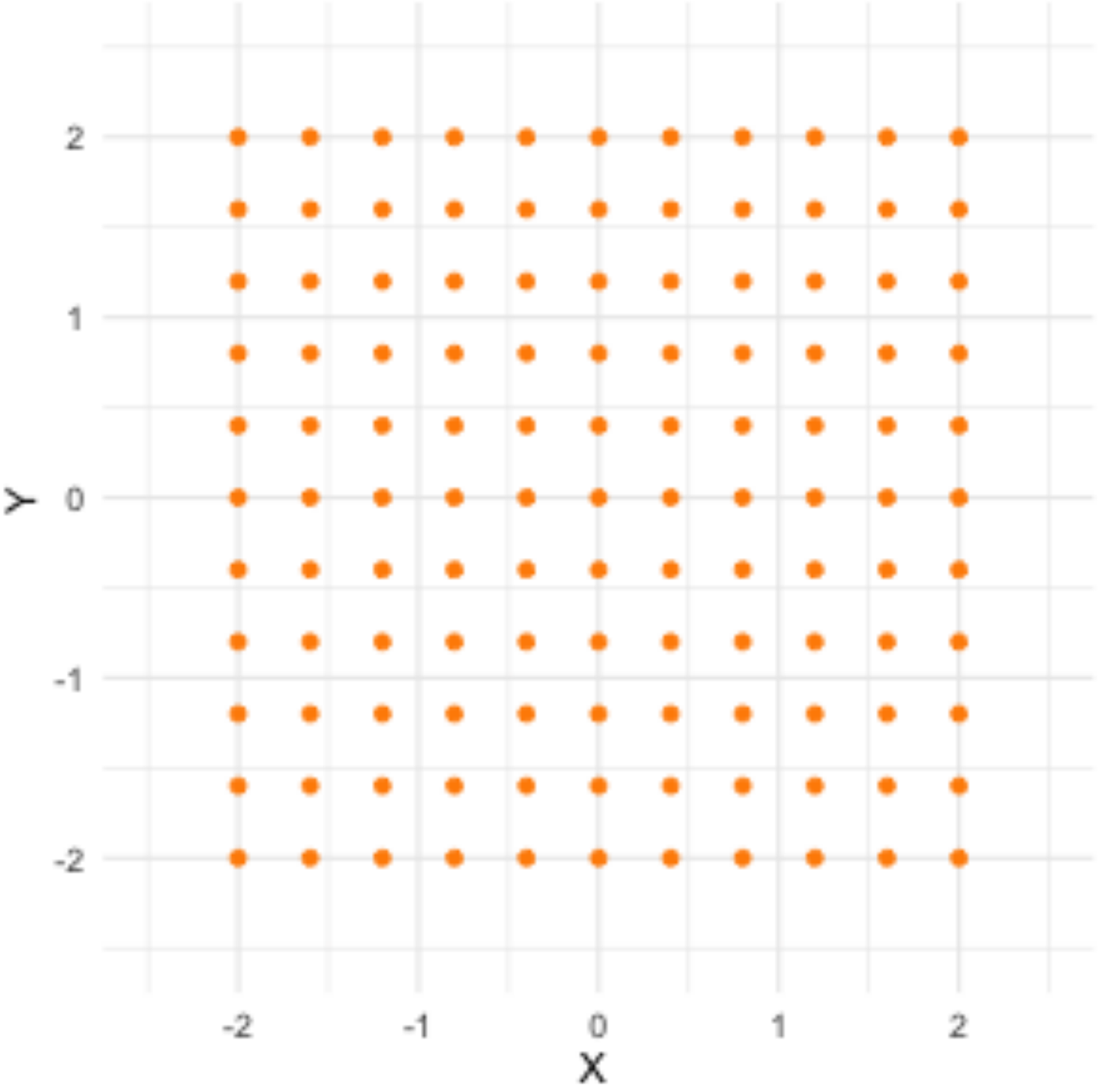
2
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Y
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-1
0
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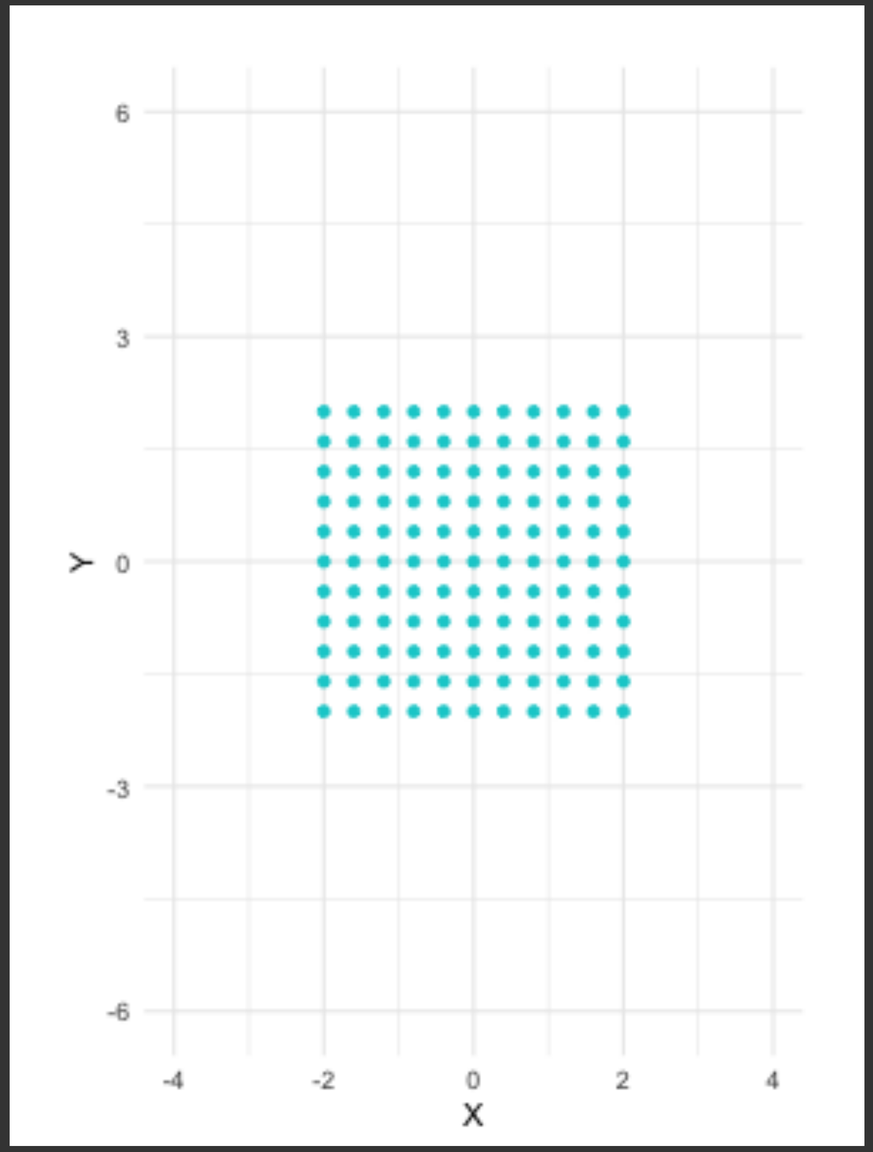
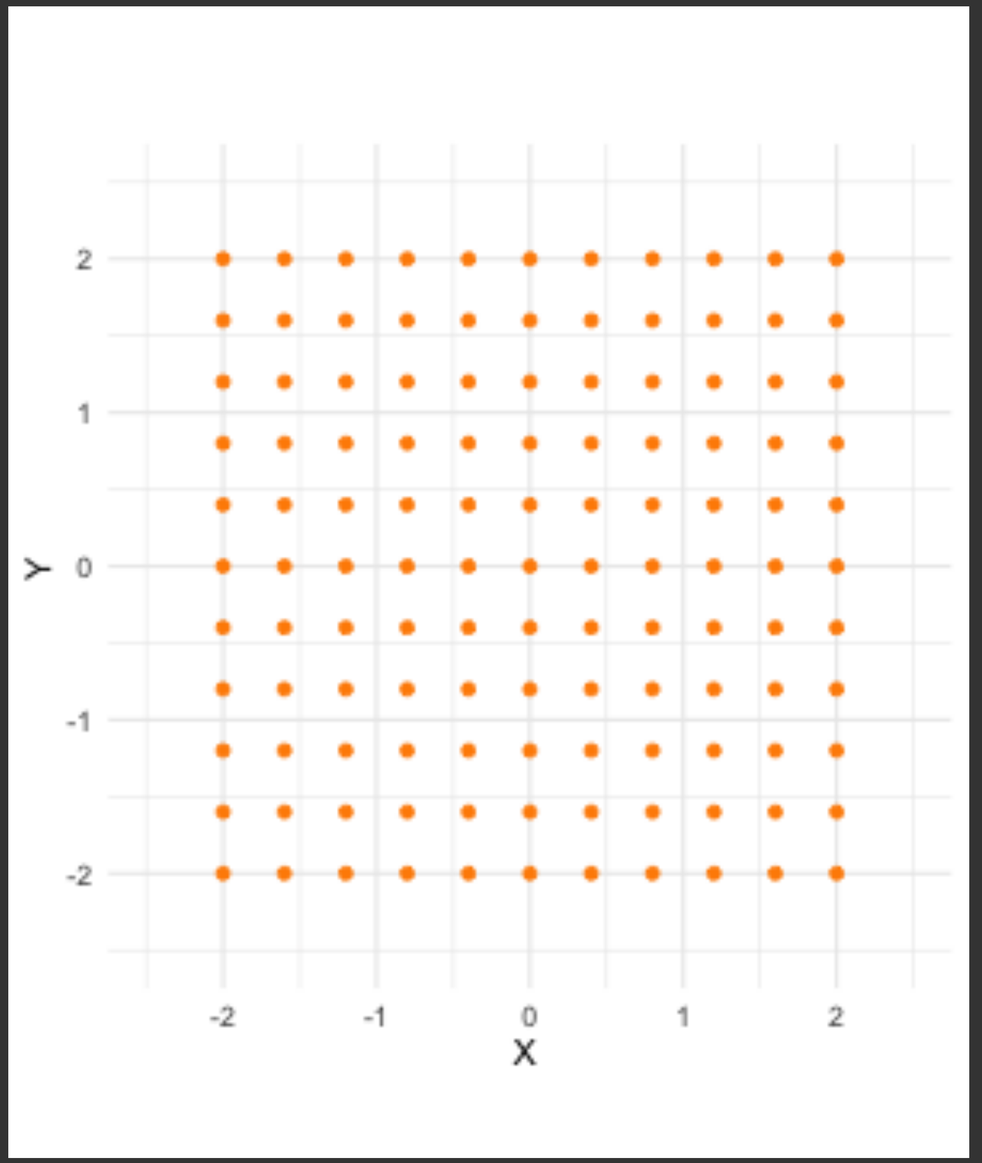
X

linear and non-linear transformation





linear and non-linear transformation

Linear:

$$\begin{bmatrix} x' \\ y' \end{bmatrix} = A \cdot \begin{bmatrix} x \\ y \end{bmatrix} \text{ where } A = \begin{bmatrix} 1 & 1 \\ -1 & 2 \end{bmatrix}$$

Non-Linear:

$$\begin{bmatrix} x' \\ y' \end{bmatrix} = \begin{bmatrix} f(x,y) \\ g(x,y) \end{bmatrix} = \begin{bmatrix} x + 0.5\sin(y) \\ y + 0.5\sin(x) \end{bmatrix}$$

but locally linear when we zoom in!