Linear stability equations

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For the Boundary condition on V:

$$
\begin{aligned}
V(+1) &= \partial_x \psi(+1) = nkBTOP \cdot \widetilde{\psi_n} && (1)\\
&= 1 && (2)\\
V(-1) &= \partial_x \psi(-1) = nkBBOT \cdot \widetilde{\psi_n} && (3)\\
&= -1 && (4)\\
BTOP_m &= (1)^m && (5)\\
BBOT_m &= (-1)^m && (6)
\end{aligned}
$$

for each Fourier mode.

For the Boundary condition on U:

$$
\begin{aligned}
U(+1) &= -\partial_y \psi(+1) = KTOP \cdot \widetilde{\psi_n} && (7)\\
&= 1 && (8)\\
U(-1) &= -\partial_y \psi(-1) = KBOT \cdot \widetilde{\psi_n} && (9)\\
&= -1 && (10)\\
KTOP_j &= BTOP_i \cdot MDY_{i,j} && (11)\\
KBOT_j &= BBOT_i \cdot MDY_{i,j} && (12)
\end{aligned}
$$

for each Fourier mode, n.

To set only the imaginary part to zero to fix the phase factor:

$$
\begin{aligned}
j &= 3(2N+1)M + M - 5 && (13)\\
SPEEDCONDITION &= \delta(j) - \delta(N+j) && (14)
\end{aligned}
$$

Then I set the final row of the jacobian with this vector. I also set the final element of the residuals vector to zero. My intention was to use a Fourier component - its complex conjugate to set the imaginary part to zero. But I am not sure these two components need to be complex conjugates of one another