(5) Let \( E = A(x-jy)e^{jkoz} + B(x+jy)e^{jkoz} \)

where \( A \) is the amplitude of the RHCP component, and \( B \) is the amplitude of the LHCP component. Equating this expression to the given linearly polarized field gives,

\[
\hat{x}: \quad A + B = E_0 \\
\hat{y}: \quad -jA + jB = 2E_0
\]

Solving for \( A, B \) gives

\[
A = \left( \frac{1}{2} + j \right) E_0 \\
B = \left( \frac{1}{2} - j \right) E_0
\]

Any linearly polarized wave (in any direction) can be decomposed into the sum of two circularly polarized waves.