3. Consider the integral equation

\[ u(t) = \int_0^\infty k(s) u(t - s) \, ds. \]

where

\[ \int_0^\infty |k(s)| \, ds < \infty. \]

Show that \( u(t) = \exp(\lambda t) \) is a solution to this linear equation if \( \lambda \) satisfies certain criteria. Find such \( \lambda \) if

\[ k(s) = A \exp(-\beta s) \cos(\alpha s) \]

where \( \beta, \alpha \) are positive.