

1. 3.1: #1,3.2#3 a,b,c page 128 in the book
2. 3.4:2a,b,d; 3,4 page1 29
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.