

### Problem 33

Show that if  $a$  and  $\lambda$  are positive constants, and  $b$  is any real number, then every solution of the equation

$$y' + ay = be^{-\lambda t}$$

has the property that  $y \rightarrow 0$  as  $t \rightarrow \infty$ .

*Hint:* Consider the cases  $a = \lambda$  and  $a \neq \lambda$  separately.