

Exercise 2

Consider the problem

$$u''(x) + u'(x) = f(x)$$
$$u'(0) = u(0) = \frac{1}{2}[u'(l) + u(l)],$$

with $f(x)$ a given function.

- (a) Is the solution *unique*? Explain.
- (b) Does a solution necessarily *exist*, or is there a condition that $f(x)$ must satisfy for existence? Explain.