

1. Let

$$g(x) = \frac{5}{x^2} + 2.$$

- (a) Show that the equation  $g(x) = x$  has exactly one solution,  $\alpha$ .
- (b) Find an interval  $[a, b]$  such that  $g([a, b]) \subset [a, b]$  and  $|g'(x)| \leq \lambda < 1$  for all  $x \in [a, b]$  so that the contraction mapping theorem applies.
- (c) Find  $\alpha$  using fixed point iterations.

2. Ex. 1, 2, 3, 5, Sec. 6.1-6.2, *Cooper*.

3. Ex. 2(a), 5, Sec. 6.3, *Cooper*. In 2(a), iterate to convergence on your calculator or computer.