My original file got deleted while pushing this to the Git repository. These are just some quick answers to the exercises.

Exercise 4.1

a) Converges to 0.9999
b) Does not converge as the endpoints have the same sign so algorithm doesn't work
c) Converges to 0.9999

The algorithm cannot find the root at 0 as the function at the midpoint is the same sign as the function on the left endpoint, so the algorithm is going to go towards the root at 1.

Exercise 4.2

a) Converges to 1
b) Does not work as endpoints have same sign
c) Using a = 0 and b = 0.1, it converges to 0. Using a = 0.5 and b = 3pi/4 it does not converge as both the endpoints are same sign and there is no root in between.

Exercise 4.3

a) Does not converge. Derivative too big
b) Does not converge. Derivative too big
c) Does not converge. Derivative too big
d) Converges to 1.476…