

M353 1.5 secant/fpm (S. Zhang) .

1. (1.5:a1) For finding the root of the function:

$$f(x) = x^2 - 5x - 11$$

- (a) Do 3 steps of the Newton's method, $p_0 = 6$. Find the errors and use the data to show the method is a second-order one.
 - (b) Do 3 steps of the secant method, $p_0 = 0$, $p_1 = 8$.
 - (c) Do 3 steps of the false position method, given the initial interval $[0, 8]$.
2. (1.5:a2)
- (a) Define a function and $x_0 < x_1$ so that all x_i , $i \geq 2$ are the same when applying the secant method and the false position method.
 - (b) Define a function and $x_0 < x_1$ so that x_2 and x_3 are the same, but x_4 are different when applying the secant method and the false position method.