

1. d)

j and k are not variables that should be shared between threads as each thread needs to loop through the full range.

e)

3 OpenMP pragmas could be used, but as the first one will already be utilising all processors there will not be any benefit.

5. Roughly 2.225×10^{-16} :

$$F(x) = x^2 - 2 = 0$$

Newton-Raphson Method

Enter initial guess: 1

Enter maximum iterations: 10

Enter algorithm tolerance: 2.225e-16

Using 5 iterations, the root of $F(x) = 0$ has been calculated as:

$$x = 1.414213562373$$

This has a residue of $-4.440892099e-016$

6.

$$F(x) = J_0(x)$$

$$F'(x) = J_1(x)$$

Newton-Raphson Method

Enter initial guess: 1

Enter maximum iterations: 2000

Enter algorithm tolerance: 0.00001

Using 1868 iterations, the root of $F(x) = 0$ has been calculated as:

$$x = -2850.210440825214$$

This has a residue of -0.01494519371