

Brief answer to selected problems in Homework 09

1. Section 4.7:

Problem 18: Solve, for example, $f(x) = \tan(\frac{x}{4}) - 1 = 0$.

Problem 29: The solution: $x_* = 1$. Newton's method: $x_{n+1} = x_n - \frac{x_n - 1}{\frac{40}{39}}$. Therefore the error between n th and $(n + 1)$ th iteration is given by $x_{n+1} - x_* = \frac{39}{40}(x_n - x_*)$. It takes about $\frac{3}{\log_{10}(\frac{40}{39})} \approx 118$ iterations.

Problem 30: Combine $r\theta = 3$ and $r \sin(\frac{\theta}{2}) = 1$ to get $f(r) = r \sin(\frac{3}{2r}) - 1 = 0$ and solve for r .

2. Section 4.8:

Problem 84: (b) and (c).

Problem 128: Yes. Since $F - G$ is a constant and $F(y_0) - G(y_0) = 0$.