Quiz 2 (14-10-2018)

MATH 371, INTRODUCTION TO NUMERICAL COMPUTING

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Question 1. [**3 marks**] $p_n = c_1 n + c_2$, is the solution to the recursive equation

$$p_n = \frac{1}{2}(p_{n-1} + p_{n+1}), \quad \text{for } n = 1, 2, \ldots.$$

Suppose $p_0 = 1$ and $p_1 = 1/6$. Use 5-digit rounding arithmetic to compute $\{p_n\}_{n=1}^{\infty}$. Is the procedure stable? Why?

Question 2. **[2 marks]** Consider the function $f(x) = x^5 - 2x + 3$. Approximate a zero of f using Newton's method accurate to within 10^{-10} using the initial guess -1.5.