MATH 373: CLASS 6

1. Exercise

1) Show that the following sequences

1.1) converges to the limit $p = 0$.
1.2) converges linearly to $p = 0$.
1.3) Find n such that $|p_n - p| \leq 5 * 10^{-2}$.

a) $p_n = \frac{1}{n}, \quad n \geq 1$.
b) $p_n = \frac{1}{n^2}, \quad n \geq 1$.

2) a) Show that the sequence $p_n = 10^{-(2^n)}$ converges quadratically to 0.

b) Show that the sequence $p_n = 10^{-(n^2)}$ does not converge to 0 quadratically.

3) Show that the Bisection Algorithm gives a sequence that converges linearly to 0.

4) Let $f(x) = x^2 - e^x$ and $\quad p_0 = 1$. Use modified Newton's method to find p_3.

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