

Closed book. You may use hand calculators.

The original test had four questions.

2. (25 Points) Consider $Q(x) = x^2 + \frac{3}{16}$. Notice that the fixed points are $x = 0.25, 0.75$. Also the iterates of any point x_0 in $(-0.75, 0.75)$ are asymptotic to 0.25. How many different Lyapunov exponents are there for points in $[-0.75, 0.75]$? What are they? (You may use the facts given as statements. You only need to answer the questions.)