

NAME :

Type of Calculator :

The fixed-point iteration $x_{k+1} = g(x_k)$, $k = 0, 1, \dots$ is defined by $g(x) = -\frac{3}{4}x^2 + \frac{5}{2}x$.

1. The function $g(x)$ has two fixed points: 0 and 2. Assuming x_0 is chosen sufficiently close to those fixed points, what is the rate of convergence (or divergence) for these two fixed points? Indicate whether there is convergence or divergence to 0 and 2.

2. Starting at $x_0 = 0.5$, illustrate three steps of the iteration $x_{k+1} = g(x_k)$, $k = 0, 1, \dots$, marking x_1 , x_2 , and x_3 , on the figure below:

