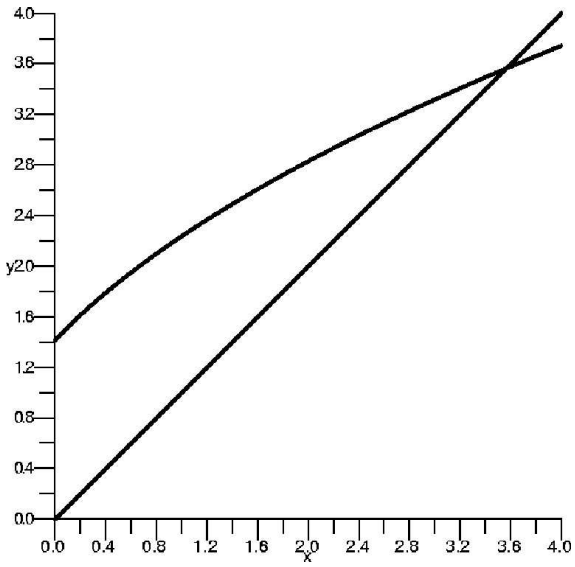
Problem statement

Suppose $f(x) = \sqrt{2+3x}$, and suppose that the sequence $\{a_n\}$ has the following recursive definition:

$$a_1 = 1;\ a_{n+1} = f(a_n) \text{ for } n > 1.$$

a) Compute decimal approximations for the first 5 terms, a_1, a_2, a_3, a_4, and a_5, of the sequence.

b) The graph to the right shows parts of the line $y = x$ and the curve $y = \sqrt{2+3x}$. Locate on this graph or on a copy to be handed in the following points: (a_1, a_2), (a_2, a_2), (a_2, a_3), (a_3, a_3), (a_3, a_4), (a_4, a_4), (a_4, a_5), and (a_5, a_5). Also show a_1, a_2, a_3, a_4, and a_5 on the x-axis. (You must draw **13 points**.)



c) Write a statement of a result in section 10.1 which shows that this sequence converges. You must find a specific **THEOREM** in the section which will guarantee convergence.

d) Compute the limit of $\{a_n\}$.