

Exercise 2.8.1

(Slope field) The slope is constant along horizontal lines in Figure 2.8.2. Why should we have expected this?

Solution

Figure 2.8.2 gives the slope field for $\dot{x} = x(1 - x)$.

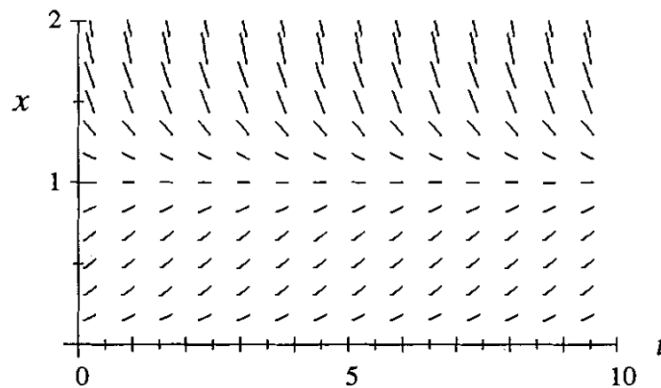


Figure 2.8.2

At every point in this tx -quarter plane, \dot{x} gives the slope of the tangent line to a solution $x(t)$. t is the horizontal axis, and x is the vertical axis. Since \dot{x} only depends on x , the slope varies vertically. \dot{x} does not depend on t , so the slope remains constant horizontally.