

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 on page 37 gives the slope field for $\dot{x} = x(1 - x)$.

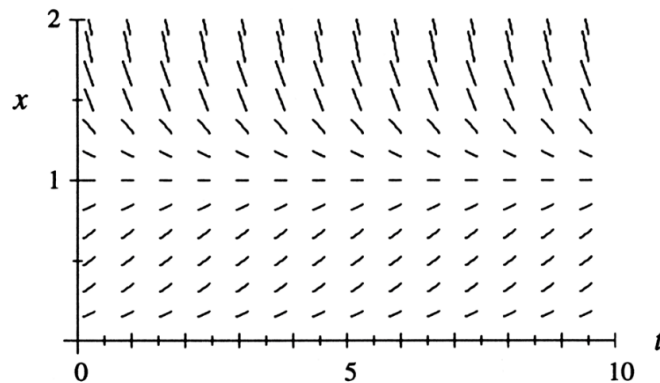


Figure 2.8.2

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.