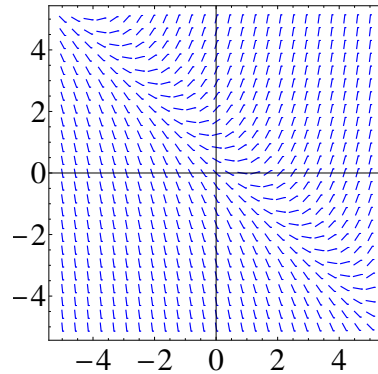


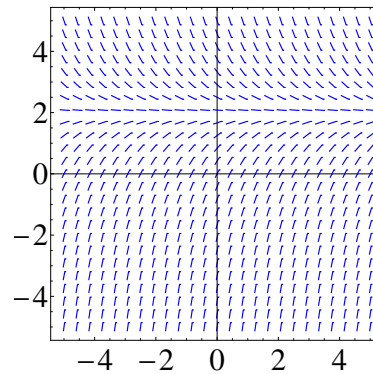
MA 114 Worksheet # 23: Graphical Methods

1. Match the differential equation with its slope field. Give reasons for your answer.

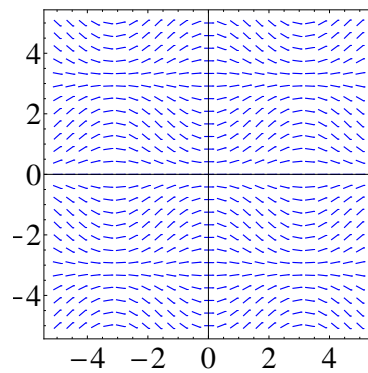
$$y' = 2 - y \quad y' = x(2 - y) \quad y' = x + y - 1 \quad y' = \sin(x) \sin(y)$$



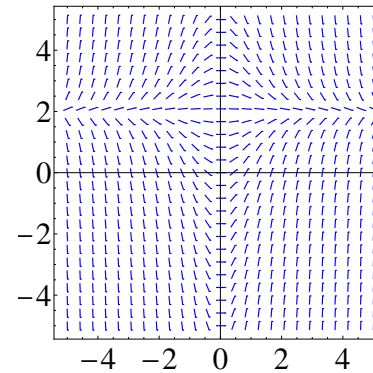
(a) Slope field I



(b) Slope field II



(c) Slope Field III



(d) Slope field IV

Figure 1: Slope fields for Problem 1

2. Use slope field labeled IV to sketch the graphs of the solutions that satisfy the given initial conditions

$$y(0) = -1, \quad y(0) = 0, \quad y(0) = 1.$$

3. Sketch the slope field of the differential equation. Then use it to sketch a solution curve that passes through the given point

(a) $y' = y - 2x, (1, 0)$

(b) $y' = xy - x^2, (0, 1)$

4. Show that the isoclines of $y' = t$ are vertical lines. Sketch the slope field for $-2 \leq t \leq 2, -2 \leq y \leq 2$ and plot the integral curves passing through $(0, 1)$ and $(0, -1)$.