Homework 30: 11.2 slope fields

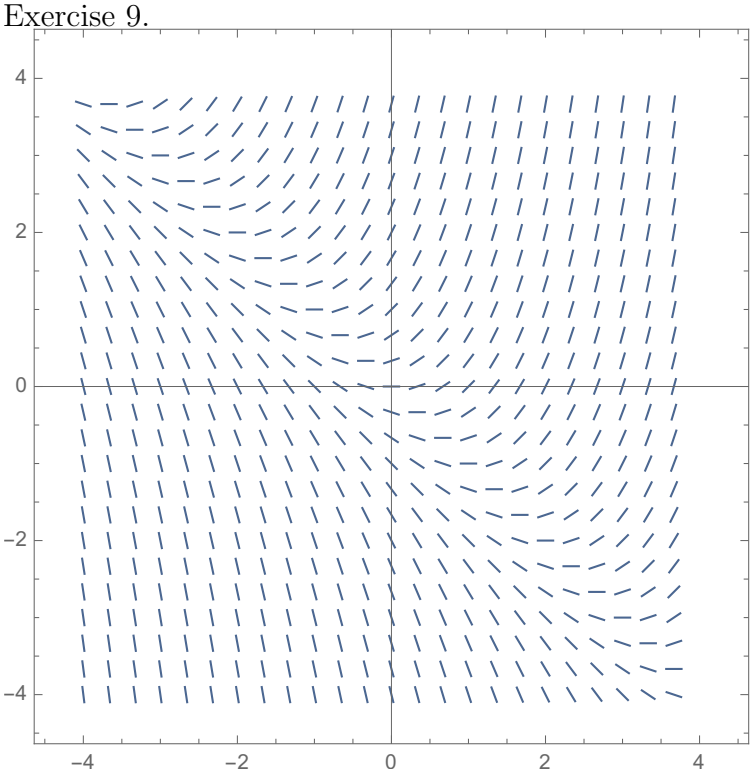
11.2 # 9, 14, 17. (Slope fields reproduced on the next page.)
Additional problems:

(1) Use *Mathematica* to draw three plots on the range $-2\pi \le x \le 2\pi$:
   (a) a slope field for $dy/dx = \sin x$ (problem 2 from last homework).
   (b) a graph of the particular solution for $y(\pi) = 2$.
   (c) the solution superimposed on the slope field.

(2) Sketch, by hand, the slope field for $y' = x - y$ on the range $-2 \le x, y \le 2$. Include slopes at $(0, 0)$, $(1, 2)$, $(-1, 2)$, $(-1, -2)$, and $(2, -1)$.

(3) (a) Plot the slope field for $y' = y - x^2$ on the range $-5 \le x \le 5$ and $-4 \le y \le 10$.
   (b) Superimpose on the slope field two different solutions: $y = x^2 + 2x + 2$ and $y = x^2 + 2x + 2 - 2e^x$.
   See, a differential equation can have two very different functions as solutions!

Exercise 9.



Problem 14.