

Homework 32: 11.2 slope fields

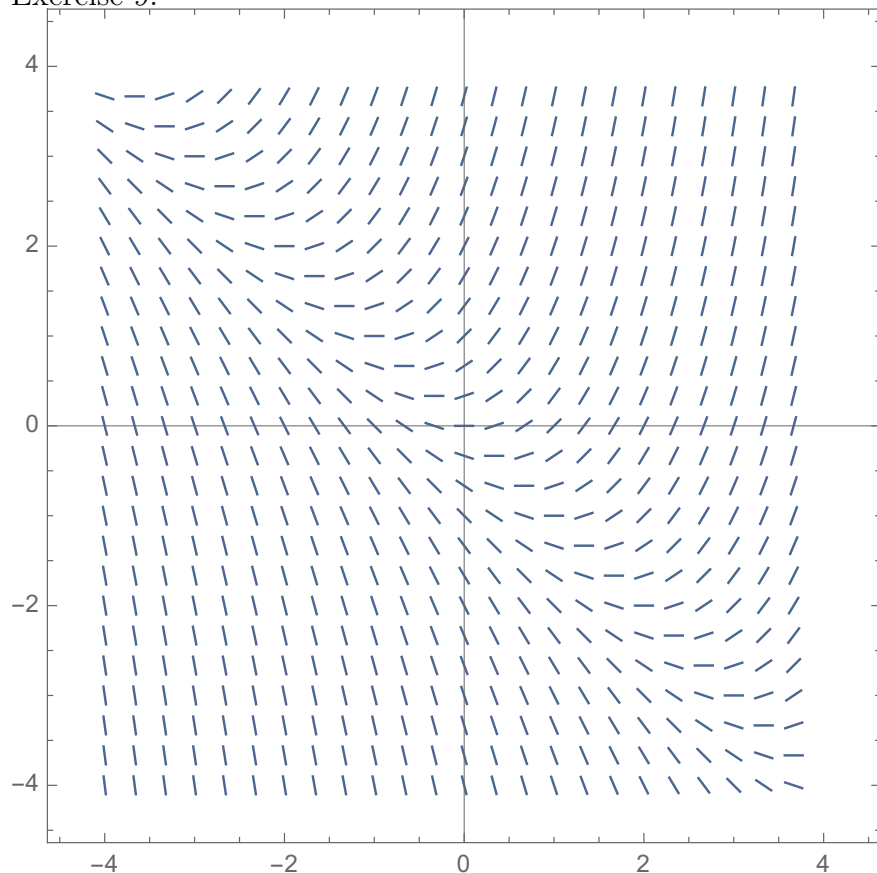
11.2 # 9, 14, 17. (Use the slope fields on this handout.)

Additional problems:

- (1) Use *Mathematica* to draw three plots on the range $-2\pi \leq x \leq 2\pi$:
 - (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 $-2 \leq x, y \leq 2$. 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 $-5 \leq x \leq 5$ and $-4 \leq y \leq 10$.
(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.

