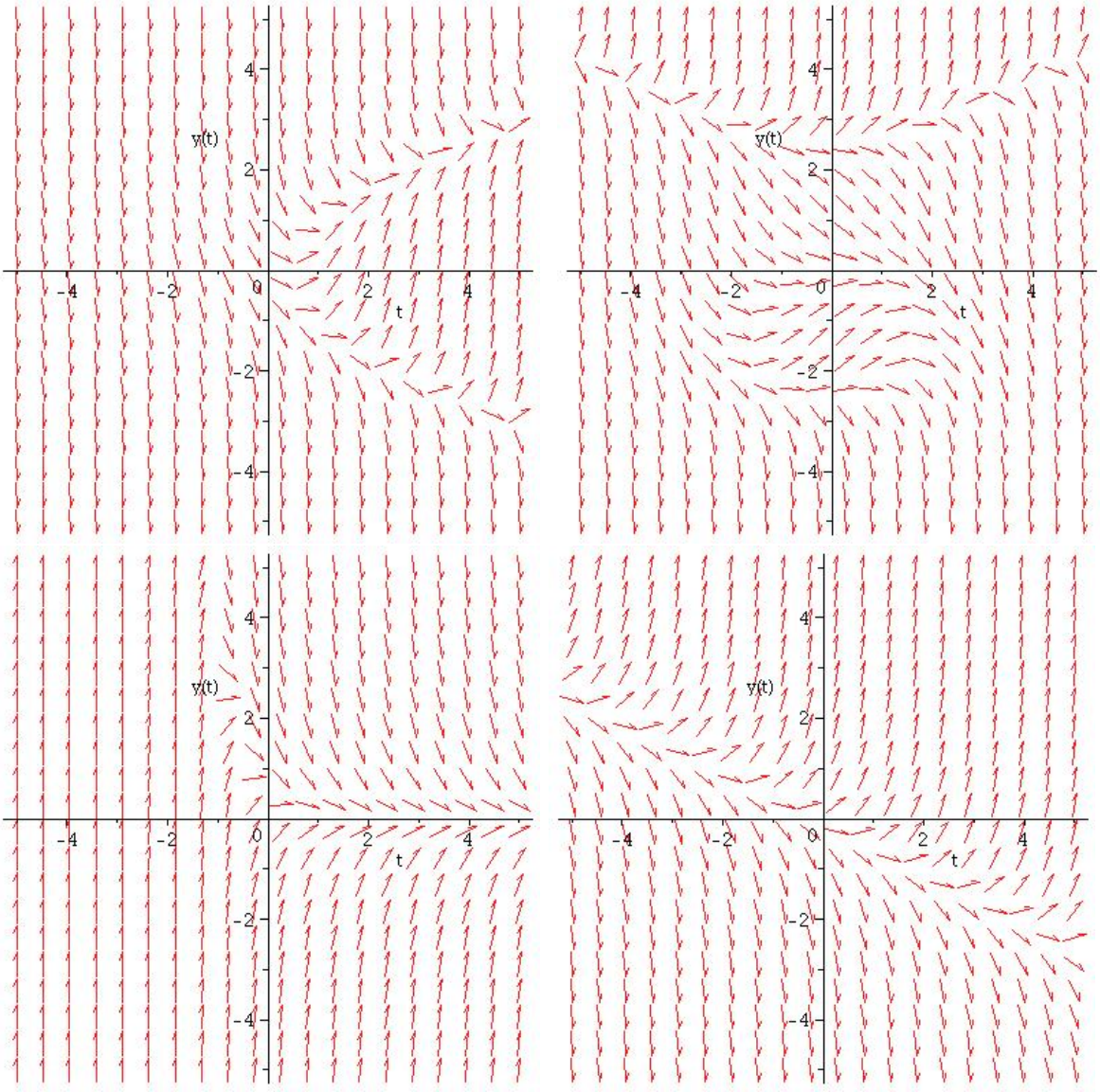
Handout 1 for Math 244

Direction Fields

Here are the direction fields for some general differential equations. Match them to the following and say what happens to the solution(s) as $t \to \infty$:

1. $y' = \mathrm{e}^{-2t} - 2y$
2. $y' = t + 2y$
3. $y' = 2t - 1 - y^2$
4. $y' = \frac{1}{6}y^3 - y - \frac{1}{3}t^2$



Freefall: Joe Kittinger (1960), Cheryl Stearns

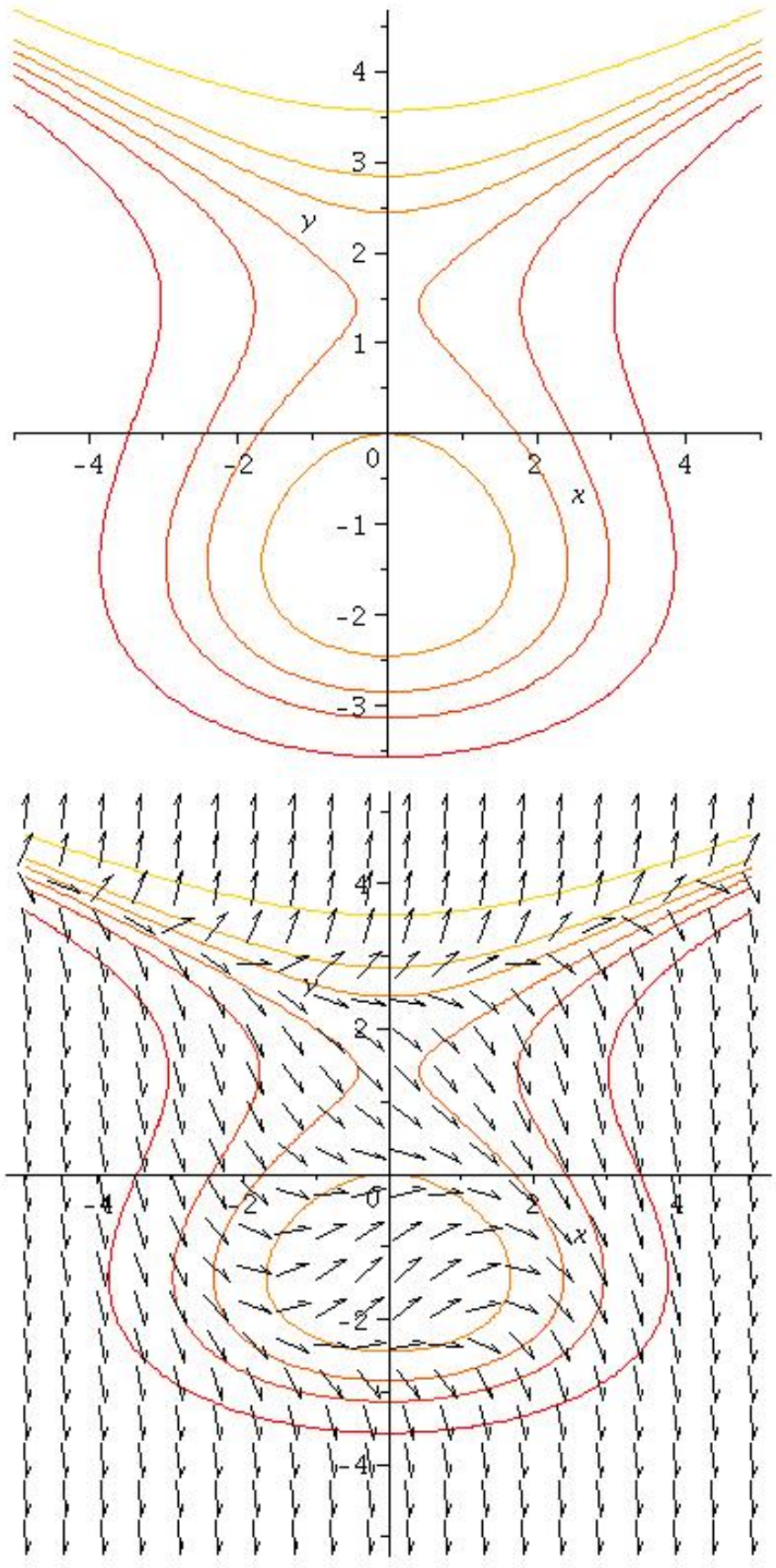


Figure 1: Isoclines as contours of $\frac{1}{6}y^3 - y - \frac{1}{3}t^2$, and the isoclines superimposed on the direction field. Can you tell which contours I plotted?