

Problem 33

In each of Problems 26 through 33, draw a direction field for the given differential equation. Based on the direction field, determine the behavior of y as $t \rightarrow \infty$. If this behavior depends on the initial value of y at $t = 0$, describe this dependency. Note that the right sides of these equations depend on t as well as y ; therefore, their solutions can exhibit more complicated behavior than those in the text.

$$y' = \frac{1}{6}y^3 - y - \frac{1}{3}t^2$$