

## Problem 10

In each of Problems 1 through 12:

- (a) Draw a direction field for the given differential equation.
- (b) Based on an inspection of the direction field, describe how solutions behave for large  $t$ .
- (c) Find the general solution of the given differential equation, and use it to determine how solutions behave as  $t \rightarrow \infty$ .

$$ty' - y = t^2e^{-t}, \quad t > 0$$