Warm-up Problems - February 28, 2007

1. Match up the differential equation with the graph of its slopefield.

(a) \( y' = y - t \)
(b) \( y' = (y - 1)t \)
(c) \( y' = (y + 1)(t - 1) \)
(d) \( y' = -yt \)
(e) \( y' = y(t - 1) \)
(f) \( y' = y(t + 1) \)
(g) \( y' = (y + 1)(t + 1) \)
(h) \( y' = (y + 1)t \)
(i) \( y' = yt \)
Lecture Problems

2. Find the general and particular solutions to the differential equations.

(a) \[ y' = \frac{2t}{y^2} \quad y(1) = 2 \]

(b) \[ \frac{dx}{dt} = x^2 \ln t \quad x(1) = -2 \]

(c) \[ y' = \frac{x}{y} \quad y(0) = 2 \]

(d) \[ y' = \frac{x}{y} \quad y(0) = -2 \]

(e) \[ y' = xe^{x-y} \quad y(0) = 0 \]

(f) \[ \frac{dP}{du} = \frac{P}{u} \quad P(1) = 5 \]