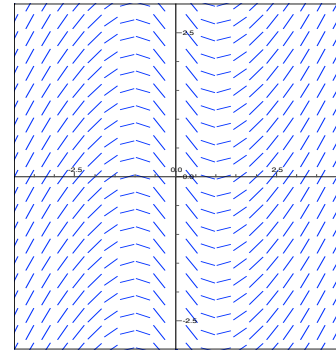22M:100 (MATH:3600:0001) Quiz 1
Feb 13, 2013

1.) Match the following differential equations to its direction field:
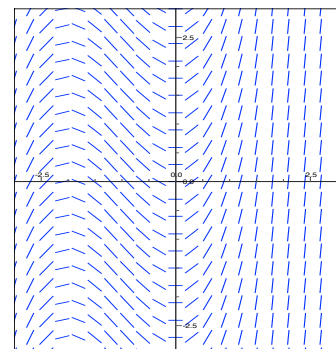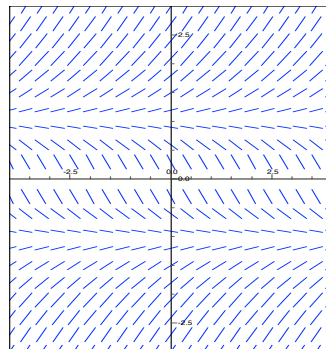
[5] **I)** $y' = t(t + 2)$ [5] **II)** $y' = y(y + 2)$
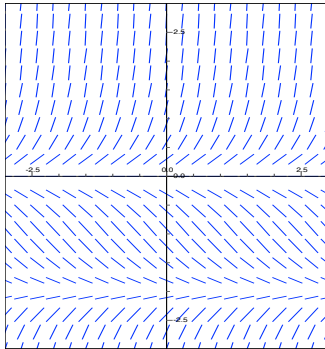
[5] **III)** $y' = ln|x|$ [5] **IV)** $y' = ln|y|$

A.) _____

B.) _____   C.) _____   D.) _____

[30] 2.) Answer both of the following questions. If your proof to 2A is short, well-written, and correct, you will be given full credit for problem 2. If your answer to 2A is incorrect or if it is not short and well-written (even if correct), your grade for problem 2 will depend solely on 2B.

2A.) Prove that $f : (0, \infty) \to R, \ f(x) = ln(x)$ is 1:1.

2B.) Solve $y' = y$.

Answer 2B: _____

[50] 3.) Solve the following differential equation (hint: first get it into the appropriate format)

$$y' = \frac{y}{t} + ln(e)$$

Answer: _____