MATH 3250, SECTION 301
QUIZ 2
02/06/2017

Honor Pledge: On my honor as a student, I have neither given nor received aid on this quiz.
Name: **Signature:**

(1)

$$\frac{dy}{dt} = (2 - y)\ln(1 + y^2)$$

(a) Find all equilibrium solutions

(b) Draw a phase line

(c) Describe the stability of equilibrium solutions based on the phase line

(d) Using the phase line, find $\lim_{t\to\infty} y(t)$, given that $y(0) = 1$.

P.T.O.

(2) Find the largest open interval containing $t = 1$ on which the following initial value problem is guaranteed to have a unique solution. Do not solve the equation.

$$t\frac{dy}{dt} + (\cos t)y = \ln(t+2),\ y(1) = 2.$$

(2 points)