MATH 23 - DIFFERENTIAL EQUATIONS, WINTER 2011
MIDTERM

PRINT NAME:

(1) Find the complete solution to
$$4y'' + y = 2sec(t/2)$$
on the interval $-\pi \leq t \leq \pi$

(2) Find the solution to the following
$$y' = e^{2x} + y - 1$$
that passes through (0,4).

(3) Find the general solution to the system of equations in terms of real valued functions:

$$x' = x + y + z,$$
$$y' = 2x + y - z$$
$$z' = -y + z$$

(4) Show that if $y = f(t)$ is a solution to the equation
$y'' + p(t)y' + q(t)y = g(t)$ where $g(t)$ is not always zero,
then the function $y = cf(t)$, $c \neq 1$, is not a solution.