Math 128A Quiz 7

1)(5 pts) Show that the following initial value problem has a unique solution

$$y'' - \arctan(t(y' + y)) = e^t,\ 0 \le t \le 1,\ y(0) = 1,\ y'(0) = 0.$$

2)(5 pts) Determine whether the following multistep methods are strongly stable, weakly stable, or unstable.

a)$w_{i+1} = 2w_i - w_{i-1} + \frac{h}{2}[f(t_i, w_i) + 2f(t_{i-1}, w_{i-1}) + f(t_{i-2}, w_{i-2})]$

b)$w_{i+1} = w_{i-3} + \frac{4h}{3}[2f(t_i, w_i) - f(t_{i-1}, w_{i-1}) + 2f(t_{i-2}, w_{i-2})]$