

**Math 5110: Homework Assignment 11**  
**Due on November 29, 2005**

1. Consider the equations

$$\begin{aligned}\frac{dx}{dt} &= f(y) - \mu_1 x \\ \frac{dy}{dt} &= g(x) - \mu_2 y\end{aligned}$$

for a putative switch with

$$f(y) = \frac{1}{(1+y)^2}, \quad g(x) = \frac{1}{1+x}.$$

Are there values of  $\mu_1$  and  $\mu_2$  for which this system acts as a switch? If not, prove it. If so, find one such pair of values.