MA 182 GROUP WORK (7.3)

NAME _____

1. Find the solution of the differential equation that satisfies the initial condition.

$$\frac{dy}{dx} = \frac{y \sin x}{1 + y^2}, \quad y(0) = 2$$

2. The transport of a substance across a capillary wall in lung physiology has been modeled by the differential equation

$$\frac{dh}{dt} = -\frac{R}{V}\left(\frac{h}{k + h}\right)$$

Where h is the hormone concentration in the bloodstream, t is time, R is the maximum transport rate, V is the volume of the capillary, and k is a positive constant that measures the affinity between the hormones and the enzymes that assist the process. Solve this differential equation to find a relationship between h and t.