MA 266 Summer 2001 HW 6 Handout NAME: _____

1. Tank 1 initially holds 24 gallons of brine with concentration 3/4 lb/gal and Tank 2 initially holds 48 gallons of brine with concentration 1/3 lb/gal. Brine with concentration 1/2 lb/gal flows from an outside sourse into Tank 1 at a rate of 2 gal/min. The solution in Tank 1 flows at a rate of 2 gal/min into Tank 2 while the solution in Tank 2 flows out of the system at a rate of 2 gal/min. Set up and solve an initial value problem that gives the amount of salt in Tank 1, $x_1(t)$, and the amount of salt in Tank 2, $x_2(t)$.

2. Tank 1 initially holds 48 gallons of brine with concentration 3/4 lb/gal and Tank 2 initially holds 48 gallons of brine with concentration 1/3 lb/gal. Brine with concentration 1/2 lb/gal flows from an outside sourse into Tank 1 at a rate of 6 gal/min and the solution in Tank 1 flows at a rate of 8 gal/min into Tank 2. The solution in Tank 2 flows back to Tank 1 at a rate of 2 gal/min while it flows out of the system at a rate of 6 gal/min. Set up and solve an initial value problem that gives the amount of salt in Tank 1, $x_1(t)$, and the amount of salt in Tank 2, $x_2(t)$.