

Hwmk 7

Math 528 Summer Session 1

Due 6/1 (Tuesday at 11:59 pm)

1 Systematic

- (a) Textbook page 136 problem 12 but just solve part (a) (convert to a system)

2 Lemonade Mixer 1.0

You have an industrial lemonade mixer that has two 50 gallon tanks completely filled with lemon juice (couldn't come up with anything more creative). Tank 1 initially contains 10 pounds of sugar dissolved in it and tank 2 initially contains no sugar. Lemon juice at the rate of 10 gals/min enters tank 1. Lemon juice leaves tank 2 at the same rate of 10 gals/min. From a connecting pipe, lemon juice leaves tank 1 into tank 2 at the rate of 20 gals/min. From a separate connecting pipe, lemon juice leaves tank 2 into tank 1 at the rate of 10 gals/min.

- (a) Set up the system that will give the amount of sugar in tank 1, $S_1(t)$, and tank 2, $S_2(t)$, at any given time.
- (b) Solve the system.
- (c) At what time and with what amount will tank 2 have the most amount of sugar in it?