Let S represent the amount (in pounds) of salt in each tank at time t minutes. Find a formula for S for each of the following and then answer the particular questions.

1.) A solution containing 1/2 lb. of salt per gallon flows into a tank at the rate of 2 gal./min. and the well-stirred mixture flows out of the tank at the same rate. The tank initially holds 100 gallons of solution containing 5 lbs. of salt.

    a.) How much salt is in the tank after 30 minutes ?

    b.) How much salt do you expect to be in the tank as t gets infinitely large ?

2.) A solution containing 1 lb. of salt per gallon flows into a tank at the rate of 5 gal./min. and the well-stirred mixture flows out of the tank at the rate of 4 gal./min. The tank initially holds 50 gallons of water containing no salt.

    a.) How many gallons of solution are in the tank after 1 hour ?

    b.) How much salt is in the tank after 1 hour ?

    c.) Assuming that the tank is very large, how much salt per gallon do you expect to be in the tank as t get infinitely large ?