MAT123, Paper Homework 4

due in recitation the week of 9/28

You have two coupons, both usable at the Wall-E World store. One coupon is good for 20% off any purchase, and the other is good for \$40 off any purchase (as long as the price is \$100 or more). Wall-E World allows these coupons to be used together. Note that the \$40-off coupon gives no discount for a purchase under \$100, so a \$90 item with this coupon costs more than a \$120 item with it. Stores can be weird like that.

1. Let p be the cost (in dollars) of an item at Wall-E World. Write an expression for a function C(p) which is the price of that item after applying the 20%-off coupon, and also an expression for a function S(p), which is the price of an item after applying the \$40-off coupon. Sketch the graphs of each of these functions for $0 \le p \le 200$. (Be sure to label important points.)

2. Explain in words what $C \circ S(p)$ and $S \circ C(p)$ represent. Then sketch the graph of $C \circ S$ and $S \circ C$ for $0 \le p \le 200$, remembering to label important points.