8.1 (L10.1) (Gold futures) The current price of gold is $412 \,€$ per ounce. The storage cost is $2 \,€$ per ounce per year, payable quarterly in advance. Assuming a constant interest rate of 9% compounded quarterly, what is the theoretical forward price of gold for delivery in 9 months?

8.2 (L10.2) (Proportional carrying charges) Suppose that a forward contract of an asset is written at time zero and there are $M$ periods until delivery. Suppose that the carrying charge in period $k$ is $qS(k)$ $(q \in (0,1))$ where $S(k)$ is the spot price of the asset in period $k$. Show that the forward price is

$$F = \frac{S}{(1-q)^M d(0,M)}.$$

8.3 (L10.7) (A bond forward) A certain 10-year bond is currently selling for $920 \,€$. A friend of yours owns a forward contract on this bond that has a delivery date in 1 year and a delivery price of $940 \,€$. The bond pays coupons of $80 \,€$ every 6 months, with one due 6 month from now and another just before maturity of the forward. The current interest rates for 6 months and 1 year (compounded semiannually) are 7% and 8%, respectively (annual rates compounded every 6 months). What is the current value of the forward contract?