1. (10 pts) Find the price of a $1000 par value 8-year bond with 4% semiannual coupons bought to yield 9% convertible semiannually.

Answer: We have \( n = 16, F = C = 1000, r = 2\%, i = 4.5\%, \) and hence
\[
P = F r a_{\overline{n}} + C \left( \frac{1}{1+i} \right)^n = 20 \times \frac{1 - 1.045^{-16}}{0.045} + \frac{1000}{1.045^{16}} \approx 719.15
\]

2. (10 pts) A $1500 par value 5-year bond with 8% semiannual coupons is selling for $1439.17. Find the yield rate convertible semiannually.

Answer: Assume that the yield rate is \( 2i \) convertible semiannually, then we have
\[
1439.17 = 1500 \times 0.04 \times \frac{1 - (1 + i)^{-10}}{i} + 1500 \times (1 + i)^{-10}.
\]
Solving the above equation (using a graphing or financial calculator), we have
\[i \approx 0.04512831642617,\]
hence the yield rate is approximately 9.03% convertible semiannually.