EC202 03
Macroeconomic Theory
Solutions to Problem Set 3

Ch. 14 #3 [6]

a. Exact: r=(1+0.04)/(1+0.02)-1=1.96%; Approximation: r=0.04-0.02=2%.
b. 3.6%; 4%.
c. 5.48%; 8%.

Ch. 14 #4 [9]

a. No. Otherwise, no one would hold bonds. Money would be more appealing: it pays at least a zero nominal interest rate and can be used for transactions.
b. Yes. The real interest rate will be negative if expected inflation exceeds the nominal interest rate. Even so, the real interest rate on bonds (which pay nominal interest) will exceeds the real interest rate on money (which does not pay nominal interest) by the nominal interest rate.
c. A negative real interest rate makes borrowing very attractive, and leads to a large demand for investment.

Ch. 14 #8 [12]

a. The IS curve shifts right. At the same nominal interest rate, the real interest rate is lower, so output is higher.
b. The LM curve does not shift.
c. Output increases. The nominal interest rate is higher than in Figure 14-5. Whether the nominal interest rate is lower or higher than before the increase in money growth, is ambiguous.
d. Output is higher than in Figure 14-5. From the IS curve, the real interest rate must be lower. While the nominal interest rate might increase relative to Figure 14-5, it increases by less than the increase in expected inflation. So the real interest rate decreases.

Ch. 15 #2 [6]

a. $1+i=(\$F/\$P)^{1/n}$, $i=(1000/800)^{1/3}-1=7.7\%$.
b. 5.7%.
c. 4.1%.

Ch. 15 #4 [12]

Let r be real interest rate, g growth rate of dividends, and x risk premium. The price is given by:

$1000/(1+r+x)+1000(1+g)/(1+r+x)^2+1000(1+g)^2/(1+r+x)^3+ =$
$=[1000/(1+r+x)][1+(1+g)/(1+r+x)+(1+g)^2/(1+r+x)^2+]=1000/(r-g+x).$
a. 50,000; 20,000.
b. 10,000; 7,692.31.
c. 16,666.67; 11,111.11.
d. Increase. A fall in the risk premium is like a fall in the real interest rate.

Ch. 16 #2 [13]

a. $0.75*(1+1.05+1.05^2)*40,000=94,575.$
b. 194,575.
c. 19,457.5.
d. By 20,000/10=2,000.
e. $0.6*(1.05^2)*40,000*7/10=18,522.$