

HW 1 Solutions

① PV of coupons:

$$= 5 \left[\frac{1 - (1.01)^{-50}}{0.01} \right] = 195.98$$

PV of principal: $= 100 \times (1.01)^{-50} = 60.80$

Price = \$256.78

② $P = \frac{6.25}{0.035} = \178.57

③ FV of annuity:

$$14,000 \left[\frac{(1.0033)^{120} - 1}{0.0033} \right] = 2,061,497$$

FV of lump sum:

$$1,000,000 \times (1.0033)^{120} = 1,494,832$$

total = \$3,552,329

④ $P = \frac{10}{0.12 - 0.03} = \111.11

⑤

	t=1	t=2	t=3	t=4	t=5
CF:	1000	1100	1210	1331	1464.1
PV:	966.18	1026.86	1091.35	1159.889	1232.73

$= 5477.01$

PV:

+ the value of the annuity

$$= \frac{1464.1 \left(\frac{1 - (1.035)^{-25}}{0.035} \right)}{(1.035)^5} = 20317.13$$

P = 25,794

⑥ Value annuity
at $t=20$: $= 10,000 \left(\frac{1 - (1.03)^{-25}}{.03} \right) = 174,131$

bring back to
 $t=0$: $174,131 \times (1.03)^{-20}$

$= \$96,412$

⑦ best to use a computer to solve the
following equation:

$$893.22 = \frac{30}{\left(1 + \frac{r}{2}\right)^1} + \frac{30}{\left(1 + \frac{r}{2}\right)^2} \dots \frac{1030}{\left(1 + \frac{r}{2}\right)^{40}}$$

$\text{yield} = 2r = 7\%$