

3.2 $PV = -(106 + 21.125/32)$

$FV = 100$

$PMT = 6.75/2$

$N = 8$

$I/Y = ?$

$I/Y = 2.4482$

Yield is $I/Y * 2 = 4.8964\%$.

- 3.3 Since the bonds are at par, the coupon rate is also 5%. Combining this fact with the development of equation (3.4) of the text, for \$1 face amount the value of the coupon payments is

$$1 - \left(\frac{1}{1 + y/2} \right)^{2T}$$

and the value of the principal payment is

$$\left(\frac{1}{1 + y/2} \right)^{2T}$$

For a 10-year par bond yielding 5%, $T=10$ and $y=.05$. The value of the coupon payments is .39 and the value of the principal payment is .61. For the 30-year bond the results are .773 for the coupon payments and .227 for the principal payment.

- 3.7 a. The value of the annuity over 25 years is

$$\frac{\$25,000}{.03} \times \left[1 - \left(\frac{1}{1.03} \right)^{50} \right] = \$643,244$$

but only

$$\frac{\$25,000}{.03} \times \left[1 - \left(\frac{1}{1.03} \right)^{30} \right] = \$490,011$$

over 15 years. So the woman should buy the annuity at a price of \$575,000 if she expects to live 25 years but not if she expects to live only 15 years.

3.8 This annuity is worth

$$\frac{\$25,000}{.06} \times \left[1 - \left(\frac{1}{1.06} \right)^{40} \right] = \$376,157$$