SUGGESTED SOLUTIONS
AssignmentI
Winter **2008**

1. a
2. e
3. a
4. e
5. a
6. e

7. a (1+10%/4)^4 – (1+9%/365)^365

8. a see below for full solution

9. c see below for full solution

10. A -\$100($PVA_{3,10\%}$) + \$300($PVA_{4,10\%}$)($PV_{3,10\%}$)
= -\$100(2.4869) + \$300(3.1699)(.7513) = \$466

11. C c) D(CVAF 8%,6) = 10,000 x 5 (PVAF 18%,3) (1.18)
D (7.3359) = 50,000 (2.1743) (1.18)
D = **17,487.11** = **\$17,500**

12. B \$100,000 = \$9,456($PVIFA_{i,12}$)
$PVIFA_{i,12}$ = 10.5753 i = 2% per month.
Amortization table:

Month	Beg Balance	Interest	Principal	End Balance
1	\$100,000.00	\$2,000.00	\$7,456.00	\$92,544.00
2	92,544.00	1,850.88	**7,605.12**	84,938.88
3	84,938.88	1,698.78	7,757.22	77,181.66

13. C
\$20,000 = \$444.89($PVIFA_{i,60}$)
$PVIFA_{i,60}$ = 44.9549 i = 1%. Annual = 1% x 12 = 12%

14. B

15. B \$1,297.58 = \$50 ($PVA_{20,YTM}$) + \$1,000 ($PV_{20,YTM}$)
YTM (semiannual rate) = 3%. Annual yield = 6%

16. A Market price = \$50 ($PVA_{16,6\%}$) + \$1,000 ($PV_{16,6\%}$) = \$898.94

17. B [(45 – x) + .83] / x = .3888 x = 33

18. B \$40 = \$2 / (.14 – g) g = 9%

19. A

t	Cash Flow
1	4(1.15) = 4.60
2	$4(1.15)^1$ = 5.29
3	$4(1.15)^2$ = 6.08
P3	6.08(1.10) / (.14 - .10) = 167.29

Po = 4.60/1.14 + 5.29/$(1.14)^2$ + (6.08 + 167.29)/ $(1.14)^3$ = 125

20. D Solution is 80,000 = 5000+5000(1.05)/(.12-.05)

21 C \$40,000 = \$11,435 ($PVAF_{18\%,n}$)
3.4980= ($PVAF_{18\%,n}$) where n = **6 years**

22. e)(\$40,000 - \$10,000) ($CF_{18\%,4}$)=30,000 (1.9388) = **\$58,164** = **\$58,200**

23. e) \$1.08 $(1 + g)^5$ = \$1.59, where g = **8.04%** ; Dividend '95: \$1.59 x 40% = \$0.636
k_s = (0.636) (1.08)/17 + .08 = **12%**

24. E = (\$30 + \$7) (10%) = **\$3.70**, which represents an increase of **85%**.= 3.7/2

25. d) Year 1:\$500 ($PV_{10\%,1}$) = \$500 (0.9091) = \$ 455
Year 2:\$700 ($PV_{10\%,2}$) = \$700 (0.8264) = 578
Year 3:\$1,400 ($PV_{10\%,3}$) = \$1,400 (0.7513) = 1,052
Year 4:\$1,400 ($PV_{10\%,4}$) = \$1,400 (0.6830) = 956
PV of the series: \$3,041
\$3,041 = A ($PVAF_{10\%,4}$) \$3,041 = A (3.1699) **A** = **\$959** = **\$960**

26. b) \$23.49»

$ in account #1: = 500FV(5%,4) = $607.75
$ in account #2: = 500FV(6%,4) = $631.24

Difference = $23.49

27) d) $90.99

Let X = amount you need to deposit in addition to the $600 company deposit

The future value of the deposits (an annuity) should equal the present value of the withdrawals

You can think of this problem as being similar to a loan represented by the future value of the deposits and payments in the form of the $2,000 withdrawals. These should be equal.

You get: (600+X)FVA(.6667%,180) = 2,000PVA(.6667%,240), solve to get X = $90.99
Where .6667% is the effective monthly interest rate (the 8% APR divided by 12)

28) d.) 9.75-9.95%

By calculator the semi-annual YTM is 4.95% then multiply by 2 to get an annual 9.90%

Using the approximation you would get a semi-annual YTM of 4.90% or an annual 9.79%

Calculator steps to get semi-annual YTM are: -887.76, PV; 35, PMT; 1,000 FV; CPT, I.

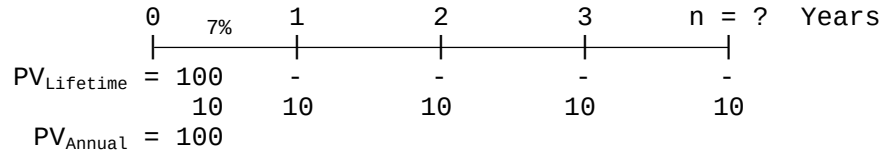
29) e) $29.40

P(0) = [1.40*1.05]/[.1 - .05] = $29.40

30) a) $1.21

P(0) = [12/.15]PV(15%,30) = $1.21 The present value of a delayed perpetuity that has no growth (g = 0)

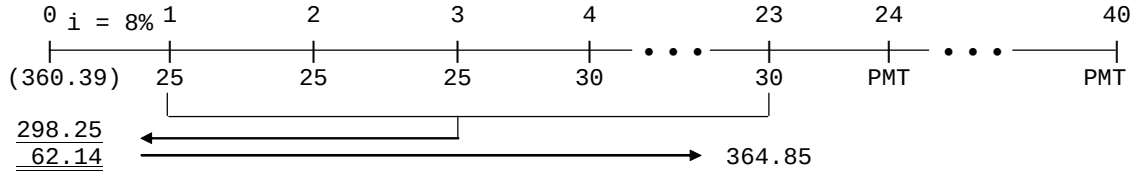
8. Time Line:



Financial calculator solution:
Inputs: I = 7; PV = -90; PMT = 10; FV = 0. Output: N = 14.695 ≈ 15 years.

9. c

Required annuity payments **Answer: c Diff: T**



Calculate the NPV of payments in Years 1-23:
$CF_0 = 0$; $CF_{1-3} = 25$; $CF_{4-23} = 30$; I = 8; and then solve for NPV = $298.25.
Difference between the security's price and PV of payments:

$360.39 - $298.25 = $62.14.
Calculate the FV of the difference between the purchase price and PV of payments, Years 1-23:
N = 23; I = 8; PV = -62.14; PMT = 0; and then solve for FV = $364.85.
Calculate the value of the annuity payments in Years 24-40:
N = 17; I = 8; PV = -364.85; FV = 0; and then solve for PMT = $40.