Ma 308 ~ Theory of Interest

Homework Problems

Time and Dollar Weighted ROR

page M5-19, # 6*. You are given the following information about an investment account:

Date	Value Immediately before Deposit	Deposit
January 1	10	
July 1	12	X
December 31	X	

Over the year, the time-weighted return is 0%, and the dollar-weighted (money weighted) return is Y. Calculate Y.

(A) -25% (C) 0% (E) 25%
(B) -10% (D) 10%

page M5-19, # 8*. At the beginning of the year, an investment fund was established with an initial deposit of 1000. A new deposit of 1000 was made at the end of 4 months. Withdrawals of 200 and 500 were made at the end of 6 months and 8 months, respectively. The amount in the fund at the end of the year is 1560.
Calculate the dollar-weighted (money-weighted) yield rate earned by the fund during the year.

(A) 18.57% (C) 22.61% (E) 28.89%
(B) 20.00% (D) 26.00%

page 255, # 3**. An investor deposits 50 in an investment account on January 1. The following summarizes the activity in the account during the year:

Date	Value Immediately before Deposit	Deposit
March 15	40	20
June 1	80	80
October 1	175	75

On June 30, the value of the account is 157.50. On December 31, the value of the account is X. Using the time-weighted method, the equivalent annual effective yield during the first 6 months is equal to the (time-weighted) annual effective yield during the entire 1-year period. Calculate X.

(A) 234.75 (C) 236.25 (E) 237.75
(B) 235.50 (D) 237.00

page 255-256, # 4**. On January 1, 1997, an investment account is worth 100,000. On April 1, 1997, the value has increased to 103,000 and 8,000 is withdrawn. On January 1, 1999, the account is worth 103,992. Assuming a dollar weighted method for 1997 and a time weighted method for 1998, the annual effective interest rate was equal to x for both 1997 and 1998. Calculate x.

(A) 6.00%
(B) 6.25%
(C) 6.50%
(D) 6.75%
(E) 7.00%

page 256, # 6**. For an investment account, you are given: The time-weighted yield rate is 13.75%

Date	1/1/96	3/1/96	4/1/96	T/96	1/1/97
Account Value (before) deposit or withdrawal	100	104	99	118	130
Deposit	-	-	17	X	-
Withdrawal	-	9	-	-	-

and the dollar-weighted yield rate is 12.81%. Calculate T.

(A) 5/1
(B) 6/1
(C) 7/1
(D) 8/1
(E) 9/1

* Problems are taken from: Matthew J. Hassett, et. al. *ACTEX Study Manual SOA Exam FM, CAS Exam 2.* ACTEX Publications, 2008 edition.

** Problems are taken from: Harold Cherry and Rick Gorvett. *Study Manual for Exam FM/Exam 2: Financial Mathematics and Financial Economics.* Actuarial Study Materials, 7th edition, 2008.