

Homework Assignment # 7 (max. points = 20)
Due at the beginning of class on Thursday March 27, 2008

Please show your work - enough to show that you understand how to do the problem. Circle your final answer. Full credit can only be given only if the answer and work leading to the answer are correct.

1. A project requires the following contributions and results in the following returns. Find the NPV of this project if the effective annual rate of interest is $i = 6\%$. Also, find the IRR of this project.

Year	Contributions	Returns
0	2,000	0
1	1,500	0
2	500	1,500
3	500	1,500
4	500	1,500
5	0	1,500

2. Suppose a project requires you to invest \$1,000 now and \$1,045 two years from now. The project returns \$2,050 one year from now. Find all the yield rates of this project.
3. For problem 2, find the range of yield rates that will result in a positive net present value.
4. You invest \$10,000 in a fund on 1/1/07 (month/day/year). On 6/1/07, you deposit another \$3,000 into the fund. On 10/1/07, you withdraw \$4,000 from the fund. On 12/31/07, your fund is worth \$14,000. What was the annual dollar-weighted rate of return on your investment?
5. You invest \$5,000 in a fund on 1/1/07. On 3/1/07, you withdraw X from the fund. On 7/1/07, you deposit \$2,500 into the fund. On 9/1/07, you withdraw \$1,000 from the fund. On 12/31/07, your fund is worth \$5,700. The annual dollar-weighted rate of return on your investment was 12.0%. Find X .
6. On 1/1/08, you deposit \$20,000 into an account. At the end of each of the next four calendar quarters, the value of the account and the deposit/withdrawal activity is as follows:

Date	Account Value	Activity
3/31/08	\$18,000	\$3,000 withdrawal
6/30/08	20,500	5,000 deposit
9/30/08	22,000	4,000 withdrawal
12/31/08	21,000	—

(The account values represent the amount in the account immediately before the deposit or withdrawal activity on that date.) Find the time-weighted rate of return on the account during 2008.

7. On 1/1/07, you deposit \$4,000 into an account. On 5/18/07, your account is worth \$5,000, and you then either deposit or withdraw (you'll have to determine which) X into/from the account. On 12/31/07, your account is worth \$5,200. Your time-weighted rate of return on the account during 2007 was 40%. Find X (and identify whether X was deposited or withdrawn).
8. James invests 100 at the beginning of each year for 10 years at an effective annual rate of 5%. He reinvests the interest payments at an annual effective rate of 7%. Find the accumulated value of James's account one year after his last deposit.
9. Tom purchases an investment for 5,000. The investment makes payments to Tom of 250 at the end of every year for 15 years. At the date of the last payment, the original principal of 5,000 is returned to Tom in addition to the final payment of 250. If Tom can reinvest his returns at an annual effective rate of interest of 7%, what is the yield rate on Tom's investment?
10. Jerry lends 10,000 to Oscar at an annual rate $i^{(12)} = 6\%$. Oscar will repay this loan with level payments at the end of each month for the next 10 years. At what rate (expressed as $j^{(12)}$) must Jerry be able to reinvest the loan payments so that the yield rate will be 8% compounded monthly?