

Group Quiz 4

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Math 111 - Spring 2012

Name: _____

key

No work = no credit

1.) Nate takes out a home loan of \$100,000 at 4.75% for thirty years. Three years later, interest rates drop and he refinances for 15 years at 3%. The cost of the refinance is 2% of the loan value. He rolls the refinance charge into the new loan.

Assuming he carries the new loan to full term, what is the total amount of interest Nate will pay over the life of the loan(s)?

N= 360
I%= 4.75
PV= 100000
* PMT= 521.65
FV= 0
P/Y= 12
C/Y= 12
PMT: <u>END</u> BEGIN

After 3 yrs, the balance is \$95142.40

N= 180
I%= 3
PV= 1.02 * 95142.40 = 97045.25
PMT= 670.18
FV= 0
P/Y= 12
C/Y= 12
PMT: <u>END</u> BEGIN

Interest in the 1st 3 yrs.

$$36(521.65) - (100000 - 95142.40) = 13921.80$$

Interest in the last 15 yrs.

$$180(670.18) - 97045.25 = 23587.15$$

Total interest: 37,508.95

2.) Nguyen graduated college at age 22 and began saving for retirement right away. He deposited \$3,000 at the end of each year into an IRA earning 8% interest. He stopped making contributions when he turned 50. When Nguyen turned 65, he began to withdraw an equal sum at the end of each month.

If he wants his savings to last until he turns 85, how much can he withdraw each month? How much did he save in total? How much did he withdraw in total?

N= 28
 I%= 8
 PV= 0
 PMT= 3000
 *FV= 286,016.49
 P/Y= 1
 C/Y= 1
 PMT: ~~END~~ BEGIN

At age 50: \$286,016.49

at age 65: \$907,292.68

monthly withdrawal of \$7588.96
~~\$7588.96~~

Total in: \$84,000

Total out: \$1,821,350.28
~~\$1,821,350.28~~

N= 20*12
 I%= 8
 PV= 907,292.68
 *PMT= 7095.52/mo
 FV= 0
 P/Y= 12
 C/Y= 12
 PMT: ~~END~~ BEGIN

3.) Kim plans her retirement as follows. She plans to retire at age 65 and hopes to be able to live upon \$5,000 each month until the age of 90. If her investments earn 12%, how much must she invest at the end of each month to be prepared for retirement if she begins saving at age 25? How much if she begins saving at age 30?

N= 25*12
 I%= 12
 *PV= \$474,732.76
 PMT= 5000
 FV= 0
 P/Y= 12
 C/Y= 12
 PMT: ~~END~~ BEGIN

She needs \$474,732.76
 in hand when she retires.

N= 40*12
 I%= 12
 PV= 0
 PMT= \$40.35/mo
 FV= 474,732.76
 P/Y= 12
 C/Y= 12
 PMT: ~~END~~ BEGIN

35*12
 vs \$73.82/mo

She must save \$40.35/mo
 if she starts @ 25 y.o.
 She must save \$73.82/mo
 if she starts @ 30 y.o.