Directions: Please answer the following questions and make sure your answer are legible. If you don’t show work and/or I can’t follow it, I won’t give partial credit. You may use a calculator. Good Luck.

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1. I ____________________________ certify that I have not discussed my work on this quiz with anyone (other than Jackie Kaminski). This includes in-person communication, electronic communication and all other forms of communication. I understand that violating this policy is considered Academic Dishonesty, and will be dealt with accordingly.

signature  date

2. (1 point) For this quiz you’ll be doing Your Retirement Planning. (Or the retirement plan of a hypothetical person you make up, I’ll never know.)

Fill in numbers you choose to use for each of the following. Notice that there are some restrictions on the range(s) you can use either to keep things reasonable and/or to make sure you don’t make the calculations on the quiz too easy/hard. You can be realistic, optimistic, or pessimistic on this quiz. You do NOT need to research numbers (but you are permitted to).

(a) Monthly income you need in retirement __2,500__ in today’s dollars. (Btw $800 – $5000)

If you’re being realistic, keep in mind that some of your income will be paid in taxes. You may consider if you are still paying a mortgage vs owning a home in good repair, if you trust Medicare will be enough health insurance, if this is a number for just your v.s. you and a spouse, etc)

(b) Number of years until you retire __30___. (Between 20 and 50 years)

We’re assuming you have absolutely no retirement savings right now for the purpose of the quiz

(c) Number of years you plan to be retired for __25___. (Btw 10 and 40 years)

Sorry for the morbid question.

(d) Assumed inflation rate __2.8%___. (Between 2.8% and 3.7%)

(e) Assumed CARG for your retirement account __9%___. (Btw 5% and 10%)

(f) Your company will match retirement contributions at __75%__ percent (Btw 25% and 100%) up to __5%___ percent of salary (Between 2% and 8%)

(g) Monthly Salary __3000__ in today’s dollars. (Btw $900 and $9,000)

Guess at monthly salary once you’re working. If you are working, feel free to lie to me. You may also choose to do a combination of you and a spouse if that’s how you are planning things.
3. (4 points) We are assuming all calculations are in today’s dollars:

Determine how much money you need in your retirement account on the day you retire to ensure you can make monthly payments of (2 a) to yourself if the account keeps earning (2 e) percent interest, and you need to make monthly payments to yourself for (2 c) years.

Hint, this is a chapter 4 question. You may ignore the effects of inflation once you’re retired.

\[ PV = PMT \times a_{\overline{n}|i} \]
<table>
<thead>
<tr>
<th>PV = 2,500 + (C_\text{annuity}) = 109,790.04 - 0.04</th>
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</table>
| \[ a_{\overline{n}|i} = \frac{(1 + 0.09/12)^{300} - 1}{1 + 0.09/12} \]  
| \[ PMT = \frac{2,979.04 - 0.04}{1.015} \]  
| \[ PMT = 52,880.40 \text{ needs to go into retirement each month} \]  

4. (6 points) Assuming you will contribute to your retirement account by letting your monthly contributions keep pace with inflation, and that all dollar values are in today’s dollars:

(a) Taking into account inflation from (2 d), what is the real rate of return on your retirement account that earns (2 e) percent interest? \[ 9\% - 3.8\% = 5.2\% \]

(b) What monthly payments are needed so that you’ll have (3) dollars (in today’s dollars) in your retirement account in (2 b)?

Hint: this is an 8.3 question

\[ FV = PMT \times s_{\overline{n}|i} \]
| FV = 2,979.04046 |
| n = 30 \times 12 = 360 |
| i = 0.062/12 |
| \[ s_{\overline{n}|i} = \frac{(1 + 0.062/12)^{360} - 1}{0.062/12} \]  
| \[ PMT = \frac{2,979.04046}{1.0550} \]  
| \[ PMT = 52,880.40 \text{ needs to go into retirement each month} \]  

5. (3 points) Assuming you make (2 g) as a monthly salary, and your company has the matching structure describe in (2 f): Everything is still in today’s dollars.

How much do you need to contribute to your retirement account each month so that your contributions and the company match combine to contribute (4 b) each month?

Hint, this is an 8.2 question

\[ 1.75 (\text{my contrib}) = 428.40 \]
| my contrib = 248.40 |
| my contrib = 163.09 |
| \[ \text{company contrib} = \frac{248.40}{1.75} \text{ over 5\%?} \]
| \[ \text{company contrib} = \frac{248.40 - 113.50}{150} \text{ over 5\%?} \]
| \[ \text{company contrib} = \frac{345.30}{150} \text{ over 5\%?} \]
| \[ \text{company contrib} = \frac{517.20}{150} \text{ over 5\%?} \]

6. (1 point) What will the monthly contributions to your retirement account (5) be in 2025 (after 10 years), assuming they keep pace with inflation (4 d)?

Hint, this is an 8.3 questions

\[ FV = 172.90 \times (1 + 0.028)^{10} \]
| FV = 2,278.9 |

Congratulations, you just planned for your retirement. More importantly, you know how to plan for your retirement at points in the future when you have accurate information on some of the answers to question 2. Note that our calculations assume your salary just keeps pace with inflation, and you get no other raises/promotions.
Directions: Please answer the following questions and make sure your answer are legible. If you don’t show work and/or I can’t follow it, I won’t give partial credit. You may use a calculator. Good Luck.

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________________________________________
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If you’re being realistic, keep in mind that some of your income will be paid in taxes. You may consider if you are still paying a mortgage vs owning a home in good repair, if you trust Medicare will be enough health insurance, if this is a number for just your v.s. you and a spouse, etc)

(b) Number of years until you retire _______. (Between 20 and 50 years)

We’re assuming you have absolutely no retirement savings right now for the purpose of the quiz.

(c) Number of years you plan to be retired for _______. (Btw 10 and 40 years)

Sorry for the morbid question.

(d) Assumed inflation rate _______. (Between 2.8% and 3.7%)

(e) Assumed CARG for your retirement account _______. (Btw 5% and 10%)

(f) Your company will match retirement contributions at _______ percent (Btw 25% and 100%) up to _______ percent of salary (Between 2% and 8%)

(g) Monthly Salary _______ in today’s dollars. (Btw $900 and $9,000)

Guess at monthly salary once you’re working. If you are working, feel free to lie to me. You may also choose to do a combination of you and a spouse if that’s how you are planning things.
3. (4 points) We are assuming all calculations are in today's dollars:

Determine how much money you need in your retirement account on the day you retire to ensure you can make monthly payments of (2a) to yourself if the account keeps earning (2c) percent interest, and you need to make monthly payments to yourself for (2c) years.

\[ PV = PMT \times \frac{1}{r} \left( \frac{1 - (1 + r)^{-n}}{r} \right) \]

\[ PMT = 2500 \]
\[ n = 30 \times 12 \]
\[ r = 0.06/12 \]

\[ PV = 2500 \times 116.04 \]
\[ PV = 116.79 \times 1644 \]
\[ PV = 416,979.04 \]

4. (6 points) Assuming you will contribute to your retirement account by letting your monthly contributions keep pace with inflation, and that all dollar values are in today's dollars:

(a) Taking into account inflation from (2d), what is the real rate of return on your retirement account that earns (2c) percent interest?

\[ 6\% - 3.5\% = 2.5\% \]

(b) What monthly payments are needed so that you'll have (3) dollars (in today's dollars) in your retirement account in (2b)?

\[ FV = PMT \times \frac{1}{r} \left( \frac{1 - (1 + r)^{-n}}{r} \right) \]
\[ n = 35 \times 12 \]
\[ r = 0.025/12 \]

\[ FV = 416,979.04 \]
\[ PMT = \frac{416,979.04}{675.39} \]
\[ PMT = 619.7 \]

5. (3 points) Assuming you make (2g) as a monthly salary, and your company has the matching structure describe in (2f): Everything is still in today's dollars.

How much do you need to contribute to your retirement account each month so that your contributions and the company match combine to contribute (4b) each month?

\[ 3000 \text{ needs to be dep into retirement act.} \]

\[ 619.7 \]

\[ 50\% \text{ match up to } 50\% \]

\[ 150 \%

6. (1 point) What will the monthly contributions to your retirement account (5) be in 2025 (after 10 years), assuming they keep pace with inflation (d)?

\[ FV = PMT \times \frac{1}{r} \left( \frac{1 - (1 + r)^{-n}}{r} \right) \]

\[ FV = 576.97 \times (1 + 0.035)^{10} \]

\[ FV = 813.85 \]

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