

Quiz #11

Instructions: You may take as long as you would like to complete the problem. However, you may not discuss this quiz with any of your classmates. You are to do your own work. The quiz is due in class on Wednesday, May 4th.

Sam recently inherited \$10,000 from her great-grandmother. She wants to figure out what she should do with the money, and she is currently considering two choices.

Choice 1 – Invest in a mutual fund that has the following possible outcomes:

Loss of \$1000	(10% chance)	All of these values represent the loss/gain from investing for one year.
Gain of \$500	(90% chance)	

Choice 2 – Invest in “junk” bonds that have the following possible outcomes:

Loss of \$5000	(30% chance)	All of these values represent the loss/gain from investing
Gain of \$2500	(70% chance)	

Sam receives utility from money according to the following function:

$$V(c) = c^{2/3}$$

1. What is the expected value of Sam’s investment if she opts for Choice 1?
2. Which plan should Sam choose? Why? Provide support for your answer.
3. How much money would Sam need to receive – for certain – in order to be persuaded not to invest in Choice 1?
4. How much money would Sam need to receive – for certain – in order to be persuaded not to invest in Choice 2?

Choice 3 – Invest in real estate investment trust (REIT) that has the following possible outcomes:

Loss of \$50	(20% chance)	All of these values represent the loss/gain from investing for one year.
Gain of \$400	(70% chance)	
Gain of \$1000	(10% chance)	

5. If Sam has Choice 3 as an option (in addition to choices 1 and 2), then what will Sam choose to invest in? Show your work.

$$\begin{aligned} \textcircled{1} \quad EV &= .10 (-1000) + .90 (500) \\ &= -100 + 450 = 350 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad EU_1 &= (-1000)^{2/3} (.10) + (500)^{2/3} (.90) = 47.7 \\ EU_2 &= (-5000)^{2/3} (.30) + (2500)^{2/3} (.70) = 42.1 \end{aligned}$$

Choice 1

$$\textcircled{3} \quad C^{2/3} = 47.7 \Rightarrow C = \$323.24$$

$$\textcircled{4} \quad C^{2/3} = 42.1 \Rightarrow C = \$273.16$$

$$\begin{aligned} \textcircled{5} \quad EU &= .20 (-50)^{2/3} + .70 (400)^{2/3} + .10 (1000)^{2/3} \\ &= 46.25 \end{aligned}$$

Choice 1