1. Consider the following money lotteries: \( L = \begin{pmatrix} \frac{1}{2} & \frac{1}{2} \\ 0 & 600 \end{pmatrix} \) and \( M = \begin{pmatrix} \frac{2}{3} & \frac{1}{3} \\ 200 & 500 \end{pmatrix} \).

(a) Jeb says that he prefers \( L \) to \( M \). What can we say about his attitude to risk?

(b) Hilary says that she prefers \( M \) to $312 for sure. What can we say about her attitude to risk?

(c) Bruno says that he would prefer $295 for sure to \( L \). What can we say about his attitude to risk?

2. Tom owns a house in San Francisco, which constitutes his entire wealth. He wants to sell the house. Scientists have just issued a prediction that next year there will be a major earthquake in San Francisco with probability 30%. As a consequence, insurance companies have issued a news release that they will not offer earthquake insurance for the next 12 months. Tom is risk averse. He reckons that next year he will be able to sell his house for $1,300,000 if there is no earthquake and for only $100,000 if there is an earthquake (because the house will be condemned and require demolition). Hugo is risk loving and wants to buy a house in San Francisco. Find a price \( P \) at which (1) Tom would be willing to sell his house today and (2) Hugo would be willing to buy today (assuming that he has enough cash to buy at that price).

3. Consider the following diagram, where point N denotes no insurance. The probability of loss is 10%.

(a) What are the initial wealth and the potential loss?

(b) What are the premium and deductible associated with contract A?

(c) What are the premium and deductible associated with contract B?

(d) What are the premium and deductible associated with contract C?

(e) What is the insurance company’s expected profit from contract A?

(f) What is the insurance company’s expected profit from contract B?

(g) What is the insurance company’s expected profit from contract C?

(h) If the agent is offered only contract C, will she sign it? Explain your answer.

(i) Give the premium and deductible of a full-insurance contract, call it contract D, that would make a risk-neutral agent indifferent between purchasing contract D and not insuring.