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HOMEWORK # 2 $\boxed{\text{ANSWERS}}$

(a) Since the expected value of $\begin{pmatrix} \$320 & \$80 & \$0 \\ 0.3 & 0.2 & 0.5 \end{pmatrix}$ is 0.3(320) + 0.2 (80) + 0.5(0) =112 and she is risk neutral, she prefers *U* to both *M* and *B*. The expected value of $\begin{pmatrix} \$320 & \$0 \\ p & 1-p \end{pmatrix}$ is \$320*p*. Since she chooses *U*, it must be that $320p \leq 260$, that is, $p \leq \frac{260}{320} = 0.813$. Furthermore, since she chooses *A* and then *U* it must be that $X \leq 260$.

(b.1) The expected value of $\begin{pmatrix} \$320 & \$0 \\ 0.9 & 0.1 \end{pmatrix}$ is \$288. If he were risk neutral he would prefer *T* to *U*. Thus he is risk averse.

(b.2) Set $U(320) = 1$ and $U(0) = 0$. Since he is indifferent between $\begin{pmatrix} \$260 \\ 1 \end{pmatrix}$ and $\begin{pmatrix} \$320 & \$0 \\ 0.9 & 0.1 \end{pmatrix}$, $U(260) = 0.9$. Since he is indifferent between $\begin{pmatrix} \$80 \\ 1 \end{pmatrix}$ and $\begin{pmatrix} \$320 & \$80 & \$0 \\ 0.3 & 0.2 & 0.5 \end{pmatrix}$, $U(80) = 0.3(1) + 0.1U(80) + 0.6(0)$, so that $U(80) = 0.375$.

(b.3) Either *U* or *T* (since they both have an expected utility of 0.9, while the other two have an expected utility of 0.375).

(c) The expected utility of $\begin{pmatrix} \$320 & \$260 & \$80 & \$0 \\ 0.1 & 0.1 & 0.3 & 0.5 \end{pmatrix}$ is $0.1(1) + 0.1(0.9) + 0.3(0.375) + 0.5(0) = 0.303$. Thus he will choose to get \$80 for sure, since $U(80) = 0.375$.
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