Homework 1  PS 172  January 2017

1. Say that a person chooses a from the choice set \( A = \{0, 2, 4, 6, 8\} \) and her utility function is given by \( u(a) = -5a \). Using the simple model of individual choice, what do you predict the person will choose? In other words, which \( a \) in \( A \) maximizes the person’s utility?

2. Say that a person chooses \( a \) from the choice set \( A = \{0, 2, 4, 6, 8\} \) and her utility function is given by \( u(a) = (a - 3)^2 \). Which \( a \) in \( A \) is the person’s optimal choice?

3. Say that a person chooses \( a \) from the choice set \( A = \{0, 2, 4, 6, 8\} \) and her utility function is given by \( u(a) = -(a - 3)^2 \). Which \( a \) in \( A \) is the person’s optimal choice?

4. Say that a person chooses \( a \) from the choice set \( A = [0, 8] \) and her utility function is given by \( u(a) = -5a \). Which \( a \) in \( A \) is the person’s optimal choice?

5. Say that a person chooses \( a \) from the choice set \( A = [0, 8] \) and her utility function is given by \( u(a) = (a - 3)^2 \). Which \( a \) in \( A \) is the person’s optimal choice? Does the first order method work?

6. Say that a person chooses \( a \) from the choice set \( A = [0, 8] \) and her utility function is given by \( u(a) = -(a - 3)^2 \). Which \( a \) in \( A \) is the person’s optimal choice? Does the first order method work?

7. Say that a person chooses \( a \) from the choice set \( A = [0, 6] \) and her utility function is given by \( u(a) = a^3 - 6a^2 + 12a \). Which \( a \) in \( A \) is the person’s optimal choice? Does the first order method work?

8. Say that a person chooses \( a \) from the choice set \( A = [0, 4] \) and her utility function is given by \( u(a) = a^3 - 9a^2 + 15a \). Which \( a \) in \( A \) is the person’s optimal choice? Does the first order method work?

9. Say that a person chooses \( a \) from the choice set \( A = [0, 6] \) and her utility function is given by \( u(a) = a^3 - 9a^2 + 15a \). Which \( a \) in \( A \) is the person’s optimal choice? Does the first order method work?

10. Say that a person chooses \( a \) from the choice set \( A = [0, 10] \) and her utility function is given by \( u(a) = a^3 - 9a^2 + 15a \). Which \( a \) in \( A \) is the person’s optimal choice? Does the first order method work?