

Place your name on the back of this sheet of paper and nowhere else. Staple your answers face up on the front of this sheet of paper. Failure to follow these directions will cost you 10 points. If you use double-sided printing or print on the back of scrap paper, I will give you one additional point.

Show all work and briefly explain all answers.

1) (30 points) Suppose your utility function for playing video games online (G), watching a movie online (M) and walking in the woods (W), is given by $U(G, M, W) = 12G^{1/3}M^{1/6}W^{1/6}$. You have a time constraint. A video game takes 3 hours. An online movie takes 1.5 hours to watch, and a walk in the woods takes 1.5 hours. You have 16.5 hours to spend this weekend. An online game costs \$2 and a movie costs \$1. You have \$6 to spend this weekend. What is your utility maximization amount of time you spend on each?

2) (30 points) Suppose your utility function for playing golf (G), watching a movie (M) and walking in the woods (W), is given by $U(G, M, W) = 16G^{1/4}M^{1/2}W^{1/8}$. You have a time constraint. A round of golf takes 4 hours. A movie takes 2 hours to watch, and a walk in the woods takes 1 hour. You have 16 hours to spend this weekend. A round of golf costs \$30 and a movie costs \$15. You have \$90 to spend this weekend. What is your utility maximization amount of time you spend on each?

3) (20 points) Suppose that your utility function is given by $U(C_0, C_1, C_2) = 16(C_0C_1C_2)^{1/4}$. Your income this year is \$200, next year is \$300, and in two years, you will be working part-time and expect to earn \$90. If the interest rate is 10%, then how much should you spend each period? What is the price of consumption this year?

1) (20 points) Find all Nash equilibria in the following matrix. Prove that you found all and prove they are Nash equilibria. Does either firm have a dominant strategy? Explain your logic. Find the cooperative equilibrium. Explain how you found it. What are the two players' secure strategies? How did you find them?

Payoff Matrix		Sony		
		High price	Medium Price	Low Price
Yamaha	High Price	20 13	21 36	22 33
	Low Price	7 18	29 35	30 16