

Econ 3070 Exam 3 Practice Problems

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1. What is the probability of getting a five or higher when you roll a die?
What is the probability of getting an odd number?
2. You make the following bet with your friend: You roll a die, and you get paid the number that shows up on the die if an odd number shows up. You pay your friend the number that shows up on the die if an even number shows up. What is your expected earnings?
3. Pickle consumes (c_1, c_2) and earns (m_1, m_2) in periods 1 and 2 respectively. The interest rate is r .
 - (a) Write down Pickle's inter-temporal budget constraint in present value terms
 - (b) If Pickle doesn't consume anything in period 1, what is the most he can consume in period 2? What do we call this?
 - (c) If Pickle doesn't consume anything in period 2, what is the most he can consume in period 1? What exactly does he have to do to attain this consumption pattern? What do we call this quantity?
 - (d) What is the slope of Pickle's budget line?
1. Dan's utility function is \sqrt{c} where c is his wealth. Dan has \$50,000 in safe assets, and he also has a house located in an area where there is the possibility of forest fires. If there is a fire, the remains of his house will be worth \$40,000. If it doesn't burn, the house will be worth \$200,000. The probability that his home will burn is 0.01.
 - (a) What is Dan's expected utility if he does not buy fire insurance?
 - (b) Suppose Dan can buy fire insurance at a price of \$1 per \$100 of insurance. Show that if he buys \$160,000 worth of insurance, he will be fully insured, in the sense that his wealth will be the same no matter what happens. What is this the value of this wealth?
1. Compute the inverse demand curve and price elasticity of demand for the following demand functions:
 - (a) $q = \frac{100}{\sqrt{p}}$
 - (b) $q = 10 - 4p$
2. The demand for a product is $\ln q = 1000 - p + \ln m$ where p is price and m is income. What is the price and income elasticities when $p = 2$

and $m = 500$?

3. The demand function for a product is $p = 10 - q$. At what price will total revenue realized from its sale be at a maximum? How many units will be sold at that price?
4. The short-run production function of a competitive firm is $f(L) = 6L^{2/3}$ where L is labor. The cost of labor is $w = 6$ and the price per unit of output is $p = 3$.
 - (a) What is the slope of the isoprofit lines?
 - (b) How many units of labor will the firm hire?
 - (c) How much output will it produce?
 - (d) How much will its total profits be?