ECON 100A - Section Notes
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Announcements

Your first midterm is coming. We will start with the following notions and practice problems and then cover anything you want in preparation of the exam! I invite you to work on the course pack questions as much as you can by then!

Notions covered today

- *Risk preferences.* Uncertain prospects are evaluated via expected utility,

$$E[u(x)] = \sum_s \pi_s u(x_s).$$

  Risk neutrality corresponds to $u(x) = x$, while risk aversion requires $u''(x) < 0$, implying strict preference for the certain equivalent over risky lotteries with the same mean.

- *Intertemporal choice.* With present consumption c_0 and future consumption c_1, the discounted utility model is

$$U = u(c_0) + \delta u(c_1), \quad 0 < \delta < 1,$$

  where δ captures patience. The tradeoff compares immediate utility against discounted future utility, shaping decisions over time.

Section Exercises

1. **Risky asset vs. selling; attitudes to risk.**
   Two expected-utility decision makers each currently have \$200 and a risky asset that yields a \$200 gain with probability p or a \$100 loss with probability $(1 - p)$. They may keep the asset or sell it for \$25. Jim has Bernoulli utility $u(x) = \sqrt{x}$; Kaz is risk-neutral.

   (a) Compute Jim's expected utility if he *keeps* the risky asset. Explain your calculation briefly in words.

   (b) For which values of p will *exactly one* of the two sell the asset? Which person is it? Relate your answer to each agent's risk attitude.

2. **Cobb–Douglas bundles and time discounting.**
   Preferences over (x_1, x_2) are represented by $u(x_1, x_2) = x_1^2 x_2$.

(a) Consider four bundles:

$$A : (3, 1), \quad B : (1, 4), \quad C : (2, 2), \quad D : (2, 1).$$

On a diagram, mark and label each bundle, then sketch and label the indifference curve through each. (A precise plot is not required; correct relative positions/shapes suffice.)

(b) Now suppose intertemporal preferences follow the discounted utility model with discount factor $\delta \in (0, 1)$. The choice is between receiving bundle $(2, 3)$ at time 0 or bundle $(3, 2)$ at time 1. For what values of δ is the first option chosen? Explain the intuition.