EXERCISES CHAPTER 5

Exercise 1. Are the preferences below monotonic?

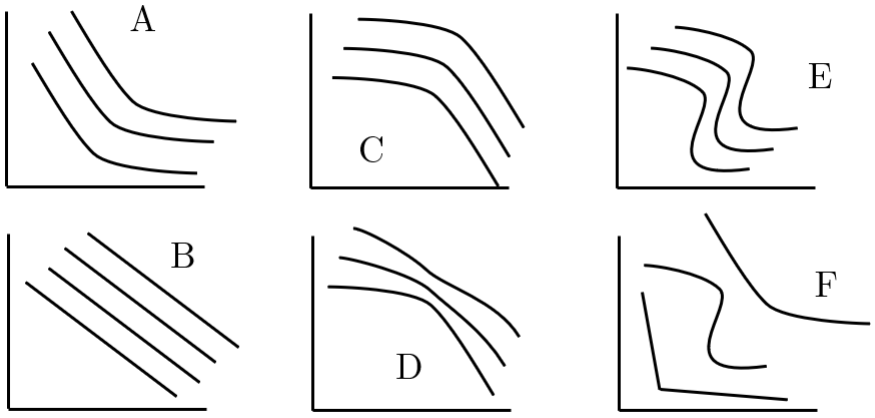
(1) $u(x_1, x_2) = 2x_1 + 3x_2$
(2) $u(x_1, x_2) = 2x_1 - 3x_2$
(3) $u(x_1, x_2) = min\{2x_1, x_2\}$
(4) $u(x_1, x_2) = max\{x_1, x_2\}$

Exercise 2. For the two bundles $(3, 1)$ and $(1, 3)$ what bundle results from taking a convex combination of these bundles with $t = \frac{1}{2}$?

Exercise 3. x_1x_2 is a convex utility function. Show that the bundle from the previous exercise is at least as good as $(3, 1)$ and $(1, 3)$ for the utility function x_1x_2.

Exercise 4. Show that the preferences represented by $u(x_1, x_2) = max\{x_1, x_2\}$ is **not convex** by finding two bundles that are indifferent and showing that some convex combination of them is strictly worse than those points.

Exercise 5. Assuming preferences are monotonic, which of these could represent convex preferences?



Exercise 6. Describe an example of real-world preferences that might not be monotonic.

Exercise 7. Describe an example of real-world preferences that might not be convex.