Advanced Micro I

Andrei Gomberg
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EXERCISE 2:

1. John lives on ale and chips, that he buys at prices $(p_a, p_c) = (2, 2)$, where p_a is the price of a pint of ale and p_c the price of one tray of chips (all prices in dollars). In particular we observe that, at current prices, John buys one pint of ale and two trays of chips. This morning John received good news and bad news: his income is now \$10 dollars, but the price of chips has changed to $p'_c = 4$. Assuming that John's choices satisfy the weak axiom of revealed preference (WARP) analyze how these changes will affect his consumption? If he is rational, would he be better or worse off according to his preferences? Illustrate in a diagram.

2. For the binary relations in question 1 (parts a to f) and question 4 of Exercise 1, please determine if they satisfy

(iii) monotonicity
(iv) convexity
(v) strict convextiy
(vi) local non-satiation
(vii) continuity

3. Show that if u represents $\succsim$ then $g(u)$ still represents $\succsim$ for any strictly increasing $g : \mathbb{R} \to \mathbb{R}$. Show that this is generally not true for non-decreasing g. If u is strictly concave, can you say that $w = g(u)$ is also strictly concave for any strictly increasing g? What if g is also concave? (do not assume differentiability)

4. Suppose a consumer consumes apples and oranges and his total utility of consumption is given by $U(a, o) = u(a) + \frac{1}{2}u(o)$, where u is a function $u : \mathbb{R} \to \mathbb{R}$. Let w be a monotonic g transformation of u and $W(a, o) = w(a) + \frac{1}{2}w(o)$. Do U and W represent the same preferences over the set of consumption bundles? Prove your answer.