Microeconomics I

Homework 2

Question 1.

Ambrose consumes only nuts and berries. Fortunately, he likes both goods. The consumption bundle, where Ambrose consumes x_1 units of nuts per week and x_2 units of berries per week, is written as (x_1, x_2). The set of consumption bundles (x_1, x_2) is such that Ambrose is indifferent between (x_1, x_2) and (1, 16) is the set of bundles such that $x_1 \geq 0$, $x_2 \geq 0$ and $x_2 = 20 - 4\sqrt{x1}$. The set of bundles (x_1, x_2) such that $(x_1, x_2) \sim (36,0)$ is the set of bundles such that $x_1 \geq 0$, $x_2 \geq 0$ and $x_2 = 24 - 4\sqrt{x1}$.

a. On a graph, plot several points that lie on the indifference curve that passes through the point (1, 16), and sketch this curve, using blue ink. Do the same, using red ink, for the indifference curve passing through point (36,0).
b. Use pencil to shade in the set of commodity bundles that Ambrose weakly prefers to the bundle (1, 16). Use red ink to shade the set of all commodity bundles (x_1, x_2) such that Ambrose weakly prefers (36,0) to these bundles. Is the set of bundles that Ambrose prefers to (1, 16) a convex?
c. What is the slope of Ambrose's indifference curves at the point (9, 8)?
d. What is the slope if his indifference curve at the point (4, 12)?
e. What is the slope of his indifference curve at the point (9, 12)?
f. Do the indifference curves you have drawn for Ambrose exhibit diminishing marginal rate of substitution?
g. Does Ambrose have convex preferences?

Question 2.

Professor Goodheart always gives two midterms in his communications class. He only uses the higher of the two scores that a student gets on the midterms when he calculates the course grade, i.e. grade=max(x_1, x_2), where x_1 is the grade on the first midterm, and x_2 is the grade on the second midterm.

a. Nancy wants to maximize her grade in this course. Which combination of scores would Nancy prefer (20, 70) or (60,60).
b. On the graph, draw an indifference curve showing all of the combinations of scores that Nancy likes exactly as much as (20, 70). Also draw an indifference curve showing the combinations of scores that she likes exactly as much as (60, 60).