CONSUMER PREFERENCES AND UTILITY

Problem #1
If we have only 2 goods and the consumer prefers to have more, not less, of good 1 and less, not more, of good 2, then:
a)   the indifference curves are convex with respect to point (0,0),
b)   the indifference curves have a positive slope,
c)   the indifference curves may intersect,
d)   the indifference curves are elliptical,
e)   none of the above answers is true.

Problem #2
If two goods are perfect complements, then:
a)   there exists a satiation point and the indifference curves are located around this point,
b)   consumers buy only the cheaper of these goods,
c)   preferences of people are influenced by choices made by others,
d)   the indifference curves have a positive slope,
e)   none of the above answers is true.

Problem #3
a) Mr. A.'s preferences may be approximated by function $U = X_1 X_2$, while Mr. B.'s preferences – by function $U = X_1^{0.1} X_2^{0.5}$. Each of them consumes 2 units of good #1 and 2 units of good #2. What can we say about Mr. A.'s and Mr. B.'s preferences?
b) What will happen when bundles of goods change and Mr. B. will consume 2 units of good #1 and 12 units of good #2?

Problem #4
a) Mr. C.'s preferences may be approximated by function $U = \min(X_1, 2X_2)$, while Mr. D.'s preferences – by function $U = X_1^{0.3} X_2^{0.3}$. Each of them consumes 2 units of good #1 and 2 units of good #2. What can we say about Mr. C.'s and Mr. D.'s preferences?
b) What will happen when bundles of goods change and Mr. C. will consume 3 units of good #1 and 12 units of good #2, while Mr. D. will consume 1 unit of good #1 and 5 units of good #2?

Problem #5
a) Mr. E.'s preferences may be approximated by function $U = X_1^{1/3} X_2^{2/3}$, while Mr. F.'s preferences – by function $U = 3X_1 + X_2$. Each of them consumes 2 units of good #1 and 2 units of good #2. What can we say about Mr. E.'s and Mr. F.'s preferences?
b) What will happen when bundles of goods change and Mr. E. will consume 3 units of good #1 and 12 units of good #2, while Mr. F. will consume 8 units of good #1 and 1 unit of good #2?

Problem #6
Assume that a single indifference curve reflecting Mr. G.'s preferences may be approximated by the formula $X_2 = 1000/X_1$.
a) If Mr. G. consumes 20 units of good #1, how much good #2 must he consume so that his choice bundle remains on this indifference curve?
b) Find the slope of the indifference curve for this point.
c) If we propose Mr. G. to exchange goods #1 and #2 according to the ratio 1:3 (3 units of good #1 for 1 unit of good #2), will he agree to trade under such conditions?
d) Graph the indifference curve and on the basis of the graph demonstrate that the law of diminishing marginal rate of substitution operates in this case.