**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Francis buys bagels (x) and donuts (y) on his way to school. His preferences over these two goods can be represented by the utility function **U(x,y) = 2x + 6lny** where x represents the number of bagels and y represents the number of donuts.

1. **(5 points)** Given his preferences find his demand functions for bagels (x) and donuts (y).

**Tangency:**



**Feasibility:**



**2 points for knowing that they must solve the tangency and feasibility conditions**

**1 point for finding the correct MRS (if not the min – 1 point for knowing in that case to not solve for the min)**

**2 Points for solving the two equations.**

1. **(4 points)** Suppose that the price of a donut is $.50 and that Francis has $12 to spend on bagels and donuts. Write Francis’s demand curve for bagels. Illustrate his demand curve in the diagram on the next page.



**Given the answer from (a) (even if it is incorrect) they get 2 points for solving for the demand curve and 2 points for the diagram.**



Bagels

4

1. **(4 points)** Suppose that the price of a bagel is $1 (the price of donuts and income remain $.50 and $12, resp.). Use your demand functions to find his best bundle. In the indifference curve diagram below illustrate his best bundle at these prices.



y

24

Slope=Px/Py=1/0.5=2

16

6

Slope=Px/Py=1/0.75=4/3

4

9

12

x

**Again given their answer to (a) they get 1 point for finding the best bundle and 3 points for the diagram.**

For the remainder of the question assume that the price of a donut rises to $.75 and that the price of a bagel and his income are unchanged at Px=$1 and I = $12

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1. **(2 points)** Use your demand functions to find his new best bundle.



**Given the answer to (a) they get 2 points for plugging in.**

1. **(3 points)** Illustrate the new budget line and the new best bundle that you found above in your diagram for part (c). Be sure to indicate the slopes of both budget lines.

**To get the full 3 points they must have the correct relationship between the budget lines.**

1. **(2 points)** What is the income elasticity of bagels?

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**They must supply the formula for the point elasticity for this demand function – if they only write the generic formula they only get 1 point.**