Senior Math - Linear Optimization Review Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hr\_\_\_\_\_\_\_

For #1-2, graph each system of equations.

1.  2. 



For #3-4, find the maximum and minimum values of the objective function f(x, y) and for what values of x and y they occur, subject to the given constraints.

3.  4. 



5. Olivia is a receptionist for a medical clinic. One of her tasks is to schedule appointments. She allots 20 minutes for a checkup and 40 minutes for a physical. The doctor can do no more than 6 physicals per day, and the clinic has 7 hours available for appointments. A checkup costs $55, and a physical costs $125.

a. Write an objective function and list the constraints that model the given situation.

b. Sketch a graph of the feasible region. c. How many of each appointment should Olivia make to maximize income? What is the maximum income?

6. Michelle wants to consume more nutrients. She wants to receive at least 40 mg. of calcium, 600 mg. of potassium, and 50 mg. of vitamin C. Michelle’s two favorite fruits are apples and bananas. The average nutritional content of both are given in the table below.

|  |  |  |  |
| --- | --- | --- | --- |
| **Fruit** | **Calcium** | **Potassium** | **Vitamin C** |
| **Apple** | **9.5 mg** | **158 mg** | **9 mg** |
| **Banana** | **7 mg** | **467 mg** | **11 mg** |

a. If each apple costs $0.55 and each banana costs $0.35, write an objective function. List the constraints that model the given situation.