

Math 105 - Finite Mathematics - J-term 2017

Quiz 6

January 12, 2017

Name: _____

Problem 1. Solve the system of equations

$$9x - 3y = 24 \quad \textcircled{1}$$

$$11x + 2y = 1 \quad \textcircled{2}$$

$$\begin{array}{r} 2\textcircled{1} + 3\textcircled{2}: 18x - 6y = 48 \\ \quad \quad \quad 33x + 6y = 3 \\ \hline \quad \quad \quad 51x = 51 \\ \quad \quad \quad x = 1 \end{array}$$

$$\begin{array}{l} \textcircled{1}: 9(1) - 3y = 24 \\ \Rightarrow -3y = 15 \\ \Rightarrow y = -5 \end{array}$$

$$(1, -5)$$

Problem 2. A company produces Italian sausages and bratwursts at plants in Green Bay and Sheboygan. The hourly production rates at each plant are given in the table. How many hours should each plant operate to exactly fill an order for 62,250 Italian sausages and 76,500 bratwursts?

Plant	Italian Sausage	Bratwurst
Green Bay	800	800
Sheboygan	500	1,000

$G = \text{GB hours}$ $S = \text{Sheboygan hours}$

$$\text{It. Sa: } 800G + 500S = 62250 \quad \textcircled{1}$$

$$\text{Brat: } 800G + 1000S = 76500 \quad \textcircled{2}$$

$$\textcircled{2} - \textcircled{1}: 500S = 14250 \Rightarrow S = 28.5$$

$$\textcircled{1}: 800G + 500(28.5) = 62250 \Rightarrow 800G = 48,000 \Rightarrow G = 60$$

The Green Bay plant should operate for 60 hours and the Sheboygan plant should operate for 28.5 hours.