ECONOMICS 207
SPRING 2008
LABORATORY EXERCISE 4

Problem 1. Solve the following equations for x.

a. $26x^2 - 43x + 6 = 0$

b. $288x^2 - 300x + 72 = 0$

Date: 3 February 2008.

Problem 2. Solve the following equations for x_1.

a. $128x_1^{-2/3} - 2 = 0$

b. $343x_1^{-3/4} - 1 = 0$

Problem 3. Solve the following equations for x_1.

a. $2x_1^{2/3} = x_1^{5/6}$

b. $2x_1^{3/4} = x_1^{5/6}$

Problem 4. Solve the following systems of equations for x_1 and x_2 using the method of elimination.

a.

$$\begin{aligned} x_1 + 2x_2 &= 4 \\ 2x_1 + 5x_2 &= 9 \end{aligned}$$

b.

$$\begin{aligned} x_1 + 5x_2 &= 14 \\ 2x_1 + 9x_2 &= 25 \end{aligned}$$

c.

$$\begin{aligned} -x_1 + x_2 &= 4 \\ 3x_1 - 5x_2 &= -9 \end{aligned}$$

d.

$$\begin{aligned} 5x_1 + 2x_2 &= 3 \\ 2x_1 + x_2 &= 2 \end{aligned}$$

e.

$$\begin{aligned} x_1 + 2x_2 &= 7 \\ 7x_1 + 2x_2 &= 13 \end{aligned}$$

Problem 5. Solve the following systems of equations for x_1, x_2, and x_3 using the method of elimination.

a.

$$\{x_1 = 1,\ x_2 = 2,\ x_3 = -1\}$$

$$\begin{aligned} x_1 + 2x_2 + 4x_3 &= 1 \\ 3x_1 + 7x_2 + 10x_3 &= 7 \\ 2x_1 + 3x_2 + 11x_3 &= -3 \end{aligned}$$

b.

$$\{x_1 = 1,\ x_2 = -3,\ x_3 = 2\}$$

$$\begin{aligned} x_1 - 2x_2 + 4x_3 &= 15 \\ 2x_1 - 5x_2 + 9x_3 &= 35 \\ 3x_1 - 2x_2 + 7x_3 &= 23 \end{aligned}$$

c.

$$\{x_1 = 1,\ x_2 = 2,\ x_3 = 1\}$$

$$\begin{aligned} -2x_1 + \frac{1}{2}x_2 + 2x_3 &= 1 \\ 6x_1 - x_2 - 5x_3 &= -1 \\ 2x_1 - 2x_2 - 4x_3 &= -6 \end{aligned}$$

Problem 6. Solve the following systems of equations for x_1 and x_2 using the method of substitution.
a.

$$\begin{aligned} 72x_1^{-3/5}x_2^{1/4} - 8 &= 0 \\ 45x_1^{2/5}x_2^{-3/4} - 15 &= 0 \end{aligned}$$

b.

$$\begin{aligned} 144x_1^{-4/5}x_2^{2/3} - 81 &= 0 \\ 480x_1^{1/5}x_2^{-1/3} - 320 &= 0 \end{aligned}$$