

ECONOMICS 207
SPRING 2007
LABORATORY EXERCISE 3

Problem 1. Solve the following equations for x .

a. $\frac{2x+5}{x+7} = \frac{13}{11}$

b. $\frac{2x-4}{13-3x} = \frac{-8}{19}$

c. $\frac{6x-4}{13} = \frac{8x-6}{17}$

d. $\frac{\frac{22x-26}{x+5}}{2x+4} = \frac{1}{2}$

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Problem 2. Solve the following equations for x .

a. $18x^2 + 3x - 6 = 0$

b. $-18x^2 + 21x + 15 = 0$

c. $20x^2 + 9x - 18 = 0$

d. $4x^2 - 9x - 9 = 0$

Problem 3. Solve the following equations for x_1 .

a. $6x_1^{-1/2} - 12 = 0$

b. $24x_1^{-1/2} - 16 = 0$

c. $625x_1^{-3/4} - 5 = 0$

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

Problem 4. Solve the following equations for x_1 .

a. $10x_1^{1/2} = x_1$

b. $14x_1^{1/2} = 2x_1$

c. $405x_1^{-2/5} = 5x_1^{2/5}$

d. $4x_1^{2/3} = 128x_1^{7/3}$

Problem 5. Solve the following systems of equations for x_1 and x_2 using the method of substitution

a.

$$5x_1 + 2x_2 = 13$$

$$7x_1 + 2x_2 = 19$$

b.

$$8x_1 + 2x_2 = -2$$

$$4x_1 + 3x_2 = 5$$

c.

$$\begin{aligned}x_1 + 3x_2 &= 11 \\4x_1 + 9x_2 &= 38\end{aligned}$$

d.

$$\begin{aligned}2x_1 + 3x_2 &= 6 \\4x_1 + 6x_2 &= 7\end{aligned}$$

e.

$$\begin{aligned}x_1 - 2x_2 &= 1 \\3x_1 + 4x_2 &= -17\end{aligned}$$

f.

$$\begin{aligned}2x_1 + 3x_2 &= 4 \\12x_1 + 18x_2 &= 24\end{aligned}$$

Problem 6. Solve the following systems of equations for x_1 , x_2 , and x_3 using the method of substitution.

a.

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

$$x_1 + 2x_2 + 4x_3 = 1$$

$$3x_1 + 7x_2 + 10x_3 = 7$$

$$2x_1 + 3x_2 + 11x_3 = -3$$

b.

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

$$-2x_1 + \frac{1}{2}x_2 + 2x_3 = 1$$

$$6x_1 - x_2 - 5x_3 = -1$$

$$2x_1 - 2x_2 - 4x_3 = -6$$

c.

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

$$x_1 - 2x_2 + 4x_3 = 15$$

$$2x_1 - 5x_2 + 9x_3 = 35$$

$$3x_1 - 2x_2 + 7x_3 = 23$$

Problem 7. Solve the following systems of equations for x_1 and x_2 using the method of substitution.

a.

$$18x_1^{-1/2}x_2^{1/3} - 18 = 0$$

$$12x_1^{1/2}x_2^{-2/3} - 4 = 0$$

b.

$$360x_1^{-1/2}x_2^{1/5} - 80 = 0$$

$$144x_1^{1/2}x_2^{-4/5} - 81 = 0$$