

**ECONOMICS 207**  
**SPRING 2007**  
**PROBLEM SET 3**

**Problem 1.** Do the following problems from the book.

a. Section 2.1

- 1) 1d
- 2) 1f
- 3) 2f
- 4) 3c
- 5) 4d

b. Section 2.2

- 1) 2b
- 2) 2c
- 3) 3a
- 4) 3b
- 5) 3e
- 6) 4d
- 7) 4e
- 8) 4f

c. Section 2.4

- 1) 4a
- 2) 4d

d. Section 2.5

- 1) 1b
- 2) 1e
- 3) 2c

**Problem 2.** Solve the following equations for  $x$ .

a.  $\frac{2x+5}{x-3} = \frac{1}{6}$

b.  $\frac{3x-2}{10} = \frac{9-5x}{-11}$

c.  $\frac{23}{4x+11} = \frac{-7}{8-5x}$

d.  $\frac{\frac{3x+14}{2x+1}}{2x-6} = \frac{13}{9}$

**Problem 3.** Solve the following equations for  $x$ .

a.  $2x^2 - 2x - 12 = 0$

b.  $15x^2 - 13x - 20 = 0$

c.  $-72x^2 - 21x + 18 = 0$

d.  $-3x^2 + 6x - 51 = 0$

e.  $7x^2 + \frac{3}{2}x - 118 = 0$

**Problem 4.** Solve the following equations for  $x_1$ .

a.  $12x_1^{-2/5} - 3 = 0$

b.  $81x_1^{-3/4} - 3 = 0$

c.  $162x_1^{-4/5} - 2 = 0$

d.  $486x_1^{-5/3} - 2 = 0$

**Problem 5.** Solve the following equations for  $x_1$ .

a.  $512x_1^{-1/3} = 2x_1$

b.  $32x_1^{-2/3} = x_1$

c.  $147x_1^{-3/5} = 3x_1^{-1/5}$

d.  $1024x_1^{2/3} = x_1^{7/3}$

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

a.

$$5x_1 + 2x_2 = 14$$

$$7x_1 - 3x_2 = 8$$

b.

$$4x_1 - 5x_2 = -9$$

$$3x_1 + 2x_2 = 22$$

c.

$$\begin{aligned} -2x_1 + 5x_2 &= 19 \\ 4x_1 + 2x_2 &= -2 \end{aligned}$$

d.

$$\begin{aligned} \frac{3}{2}x_1 + 3x_2 &= 3 \\ 4x_1 - 2x_2 &= 28 \end{aligned}$$

e.

$$\begin{aligned}2x_1 + 5x_2 &= 2 \\4x_1 + 10x_2 &= 4\end{aligned}$$

f.

$$\begin{aligned}x_1 - 2x_2 + 3x_3 &= 8 \\4x_1 - 7x_2 + 9x_3 &= 26 \\-2x_1 - 2x_2 + 13x_3 &= 21\end{aligned}$$



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

a.

$$40x_1^{-3/4}x_2^{1/2} - 25 = 0$$

$$80x_1^{1/4}x_2^{-1/2} - 32 = 0$$

b.

$$1296x_1^{-4/5}x_2^{1/3} - 64 = 0$$

$$2160x_1^{1/5}x_2^{-2/3} - 405 = 0$$