

**ECONOMICS 207**  
**SPRING 2007**  
**PROBLEM SET 2**

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

- a. Section 2.3
  - 1) 2a
  - 2) 2d
  - 3) 2e
- b. Section 2.3
  - 1) 3a
  - 2) 3b
  - 3) 4a
- c. Section 3.1
  - 1) 1a
  - 2) 1b
  - 3) 1c
- d. Section 3.2
  - 1) 1
  - 2) 2
- e. section 4.2
  - 1) 1a
  - 2) 3a
  - 3) 6

**Problem 2.** Carry out the following long division operations.

a.  $13 \overline{)299}$

b.  $10 \overline{)925}$

c.  $42 \overline{)2058}$

d.  $213 \overline{)12412}$

**Problem 3.** Complete the square in the following and then write in the following form  $(x + a)^2 + c$ . For example the first problem would be written  $(x + 1)^2 - 1$ .

a.  $x^2 + 2x$

b.  $x^2 - 8x$

c.  $3x^2 + 12x$

d.  $4x^2 - 16x$

e.  $8x^2 - 16x + 1$

f.  $25x^2 - 20x + 7$

**Problem 4.** Simplify, add, subtract, multiply or divide the following fractions. Express all answers in reduced form.

a.  $\frac{54}{80} + \frac{7}{16}$

b.  $\frac{17}{21} + \frac{3}{49}$

c.  $\left(\frac{131}{524}\right) \left(\frac{\frac{18}{5}}{\frac{9}{10}}\right)$

d.  $\frac{2}{11} + \frac{2}{3} + \frac{33}{77} - \frac{8}{21}$

e.  $\frac{8a}{3b} + \frac{3b}{a} + \frac{5}{b}$

f.  $\frac{a}{ab-b^2} - \frac{2}{a-b} + \frac{ab+b^2}{a^3-ab^2}$

**Problem 5.** Factor the following.

a.  $6x^2 - 11x - 10$

b.  $12x^2 - 16x - 28$

c.  $9x^2 - 3x - 30$

d.  $18x^2 + 3x - 10$

e.  $24x^2 - 20x - 16$

f.  $8x^2 + 29x - 12$

**Problem 6.** Solve the following equations for  $x$ .

a.  $2x + 3 = 13$

b.  $7x + 3 = 27 - 5x$

c.  $\frac{x+1}{2x+3} = 22$

d.  $\frac{2x-5}{x+6} = \frac{5}{11}$

e.  $\frac{x+3}{(x+3)(x-2)} = \frac{1}{8}$

f.  $\frac{x-2}{(x-3)(x+2)} = \frac{1}{3}$

**Problem 7.** Solve the following equations for  $x$ .

a.  $x^2 + 2x + 1 = 0$

b.  $25x^2 - 20x - 320 = 0$

c.  $3x^2 + 15x - 9 = 0$



d.  $-4x^2 - 6x + 54 = 0$

e.  $8x^2 - 12x - 56 = 0$

f.  $4x^2 - 2x + 5 = 0$

**Problem 8.** Solve the following equations for  $x_1$ .

a.  $9x_1^{-1/4} - 3 = 0$

b.  $36x_1^{-1/4} - 6 = 0$

c.  $48x_1^{-4/7} - 3 = 0$

d.  $32x_1^{-2/3} - 2 = 0$

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

f.  $1458x_1^{-6/7} - 2 = 0$

g.  $507x_1^{-2/3} - 3 = 0$

h.  $1250x_1^{-4/3} - 2 = 0$

**Problem 9.** Consider the following quadratic equation in  $x_1$ .

$$3pa_3x_1^2 + 2pa_2x_1 + pa_1 = w_1$$

In each of the problems below solve the equation for  $x_1$  for the given values of  $a_3, a_2, a_1, p$  and  $w_1$ .

a.  $a_3 = -1, a_2 = 20, a_1 = 100, p = 20$  and  $w_1 = 500$

b.  $a_3 = -1, a_2 = 5, a_1 = 50, p = 10$  and  $w_1 = 20$

c.  $a_3 = -2$ ,  $a_2 = 50$ ,  $a_1 = 200$ ,  $p = 10$  and  $w_1 = 4860$

d.  $a_3 = -3$ ,  $a_2 = 50$ ,  $a_1 = 100$ ,  $p = 5$  and  $w_1 = 1000$