

HOMEWORK for *College Algebra*, 3rd edition, by Larson, Hostetler, & Hodgkins, page 1

If you find that you need help (even changing an answer after you look it up qualifies as help) on more than 25% of these, then you probably should do more homework on that material. Do problems until you feel comfortable doing them with no more help than you will have on the test.

When you finish the chapter, make up a sample test for yourself from the review problems, take it, and grade it. Continue to do that until you are pleased with your sample test grade.

Section 2.3 can be done most effectively with graphing technology. Some problems may suggest a graphing calculator, but these problems are types that we have always done by hand or with a scientific calculator.

The problems in the Appendix were previously in Chapter P. These are not included in the syllabus, but should be used as needed for review.

A.3 7, 9, 11, 17, 25, 27, 29, 33, 39, 51, 53, 55

A.4 17, 18, 27, 31, 35, 37, 41, 43, 45, 47, 49, 53, 55, 59, 61, 65

A.5 17, 19, 23, 25, 29, 31, 35, 39, 41, 45, 47, 49, 51

A.6 3, 5, 7, 11, 13, 15, 19, 21, 23, 27, 35, 37, 39, 43, 47

A.7 7, 9, 13, 15, 21, 23, 27, 29, 35, 37, 41, 43, 44, 47, 49, 59

Additional algebra problems: Simplify and write the answer with no negative exponents.

1. $x^{-1} + y^{-1}$ 2. $\frac{1}{x^{-1} + 1}$ 3. $\frac{x + y}{x^{-1} + y^{-1}}$ 4. $\frac{(a + b)^{-1}}{a^{-1} + b^{-1}}$

1.1 1, 5, 19, 23, 25, 37, 45, 47, 53, 63, 65, 69, 71, 73, 74

1.2 19, 21, 23, 25, 27, 29, 33, 35, 37, 39, 41, 43, 47, 49, 53, 55, 61, 63, 69, 70, 75, 76, 79, 81

1.3 11, 12, 13, 15, 21, 23, 25, 31, 33, 37, 39, 41, 51, 55, 59, 61, 63, 65, 67, 69, 77, 79, 81

1.4 5, 7, 9, 13, 19, 27, 29, 31, 37, 39, 41, 43, 45, 46, 51, 55, 57, 59, 60, 61, 63, 65, 71, 73

1.5 1, 7, 11, 13, 23, 27, 31, 35, 41, 45, 51, 53, 65, 71, 72

1.6 17, 23, 25, 31, 33, 35, 37, 39, 40, 55, 59, 61, 65

1.7 3, 7, 11, 15, 17, 19, 23, 27, 29, 33, 37, 38, 45, 53, 55

2.1 13, 19, 23, 29, 35, 49, 51

2.2 1, 4, 7, 9, 10, 15, 16, 19, 21, 23, 25, 27, 28, 29, 31, 33, 35, 37, 41, 45, 47, 53, 55, 57, 58, 59, 60, 61, 63, 71, 73, 75

2.3 1-10, 11, 13, 15, 17, 19, 21, 25, 31, 33, 35, 37, 39, 43, 45, 47, 49, 51, 52

2.4 1, 5, 7, 13, 15, 17, 19, 21, 23, 25, 27, 29, 33, 35, 43, 45, 47, 48, 51, 57, 61, 63, 69, 71

2.5 14, 17, 20, 23, 25, 27, 29, 31, 32, 33, 48

3.1 1, 3, 8, 9, 10, 13, 15, 16, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 36, 37, 39, 44, 55, 59, 63, 65, 66, 75

3.2 1, 3, 5, 7, 9, 12, 15, 17, 21, 23, 25, 29, 33, 35, 37-41, 43, 45, 47, 49, 59, 65, 67, 69

3.3 1, 3, 7, 9-12, 15, 16, 18, 18, 23, 25, 27, 39, 40, 41, 43, 45, 47-49, 51, 55ab, 57, 59

3.4 1, 5, 9, 13, 17, 20, 25, 27-29, 33, 35-37, 39, 41, 43, 45, 55, 57, 59(optional), 61(optional)

3.5 2, 3, 5-7, 9, 11, 13, 23, 30, 33, 41, 47, 50, 59, 61

4.1 1-9, 11, 12, 15, 17, 19, 21, 23, 25, 27, 31, 33, 35, 37, 43, 45, 47, 49, 53

4.2 1-7, 12-15, 19, 21, 23, 25, 27, 31, 35-41, 43-45, 47, 49-51, 53, 55, 57, 59, 61

4.3 1, 3, 9, 10, 13, 15, 17, 21, 27, 31, 33, 35, 39, 41, 49-53, 55, 59, 63a

4.5 7, 11, 13, 19, 21, 27, 29, 31, 33, 35, 41, 43, 45, 59, 61, 63, optional exercises 67, 69, 73, 75

4.6 1, 3, 5, 27, 31, 33, 35, 37, 39, 41, 43

4.7 1, 3, 5, 9-22, 27, 31, 33, 35, 41, 43, 49, 55, 57, 59, 61

5.1 1, 3, 5, 9, 11-18, 19, 21, 23, 25, 29, 31, 33, 35, 39, 43, 45, 51, 53, 55, 57, 60

5.2 1, 3, 5, 7, 11, 13, 15, 17, 19, 21, 25, 29, 33, 35, 37, 38, 39-47, 49, 53, 55, 65, 67

5.3 9, 11, 13, 17, 19, 23, 27, 33, 37, 39, 41, 51, 53, 57, 65, 67, 69, 73, 75, 79, 81(optional)

5.4 1, 5, 9, 11, 13, 15, 17, 21, 25, 29, 35, 41, 43, 45, 51, 53, 55, 59, 61, 65, 67ab, 73

5.5 1, 3, 7, 10, 11, 13, 17, 19, 21, 23, 25, 27, 29, 31, 41, 45ac

HOMEWORK for *College Algebra*, 3rd edition, by Larson, et. al., page 2**6.1** 1, 3, 5, 7, 9, 13, 19, 27, 41, 45, 47, 51, 55**6.2** 3, 5, 7, 13, 15, 23, 31, 33, 35, 39, 41, 45**6.3** 1, 3, 5, 13, 19, 27, 31, 33, 35, 39, 41**7.1** 1, 3, 5, 13, 17, 20, 21, 23, 29, 31, 37, 39, 43, 45, 49, 51, 59**7.2** 1, 5, 7, 16, 19, 39, 41**7.4** 3, 9, 11, 17, 23, 29, 31, 33, 35

Supplement: For each of the following systems with a unique solution, solve it using Cramer's Rule:

7.2: 31, 33; 7.1: 41, 47

Cramer's Rule for Solving Systems of Linear Equations

If a system of linear equations with the same number of equations as unknowns has a unique solution, that solution may be found using ratios of various determinants. The following example of a 3 by 3 system illustrates the rule.

To solve this system, where x , y , and z are variables and all other letters represent known real numbers

$$a_1x + b_1y + c_1z = k_1$$

$$a_2x + b_2y + c_2z = k_2$$

$$a_3x + b_3y + c_3z = k_3$$

consider the following four determinants. (Evaluate determinants using the methods of 7.4.)

$$D = \begin{vmatrix} a_1 & b_1 & c_1 \\ a_2 & b_2 & c_2 \\ a_3 & b_3 & c_3 \end{vmatrix} \quad D_x = \begin{vmatrix} k_1 & b_1 & c_1 \\ k_2 & b_2 & c_2 \\ k_3 & b_3 & c_3 \end{vmatrix} \quad D_y = \begin{vmatrix} a_1 & k_1 & c_1 \\ a_2 & k_2 & c_2 \\ a_3 & k_3 & c_3 \end{vmatrix} \quad D_z = \begin{vmatrix} a_1 & b_1 & k_1 \\ a_2 & b_2 & k_2 \\ a_3 & b_3 & k_3 \end{vmatrix}$$

If $D = 0$, the system does not have a unique solution. If $D \neq 0$, the solution to the system of equations is

$$x = \frac{D_x}{D}, \quad y = \frac{D_y}{D}, \quad \text{and} \quad z = \frac{D_z}{D}.$$

$$x - 2y - 3z = 3$$

Example: Solve $2x - 5y + 3z = -4$

$$-3x + 4y + 2z = -4$$

$$D = \begin{vmatrix} 1 & -2 & -3 \\ 2 & -5 & 3 \\ -3 & 4 & 2 \end{vmatrix} = 1(-22) + 2(13) - 3(-7) = 25$$

$$D_x = \begin{vmatrix} 3 & -2 & -3 \\ -4 & -5 & 3 \\ -4 & 4 & 2 \end{vmatrix} = 50, \quad D_y = \begin{vmatrix} 1 & 3 & -3 \\ 2 & -4 & 3 \\ -3 & -4 & 2 \end{vmatrix} = 25, \quad D_z = \begin{vmatrix} 1 & -2 & 3 \\ 2 & -5 & -4 \\ -3 & 4 & -4 \end{vmatrix} = -25$$

Thus, the solution of the system is $x = \frac{50}{25} = 2$, $y = \frac{25}{25} = 1$, $z = \frac{-25}{25} = -1$.