DSPS 66: MATH TUTORIAL

CREATING AND USING MATH STUDY GUIDES

1. **WHAT IS A MATH STUDY GUIDE ?**

A math study guide is a form you develop, in conjunction with your instructor, tutor or study buddy, to use in learning a concept. As you are doing your homework, create study guides for those concepts you did not understand on your own.

To create your own study guide, do the following:
(a) Label your lined paper with the math class, chapter section, page number, problem number and concept (an example is provided).

(b) Write the problem on the left side of the paper, skipping lines between each step (include ALL steps that are necessary to understand the process; do not take short cuts that will confuse you later).

(c) Write the steps IN YOUR OWN WORDS on the right side of the paper (draw a line). Explain in words what you did with mathematical symbols in the problem. This will make the abstract concept become more real to you.

(d) Do your scratch work either at the bottom of the page (draw a line), below the written explanation of the process (draw a line), or within the text of your written explanation. DO NOT do your scratchwork in the same space as the problem. This confuses your brain as it tries to make sense of and remember what it sees.

2. **WHY GO TO ALL THE EFFORT TO CREATE STUDY GUIDES WHEN IT SEEMS THAT ENOUGH TIME ALREADY HAS BEEN SPENT DOING THE HOMEWORK ?**

The purpose of a study guide is to **clarify the process**, step by step, of a basic concept you need to know. By analyzing what is done in each step, clearly writing down each step, and applying the process to a specific problem, you are **LEARNING** and **PRACTICING** the concept as you create the study guide. In addition, you will then use the study guide later TO **STUDY FOR YOUR EXAMS.** You can develop a notebook of study guides throughout the semester that covers just about everything you need to know for the final. It is very much worth the effort you spend in creating a study guide !

10 points

Study Guide #

NAME _____

DATE _____

Math 100 Chapter 3.5 page 182

SIMPLIFYING EXPRESSIONS WITH NEGATIVE EXPONENTS

20 points

#69

$$\frac{(4\,a^2\,b^3)^{-2}\,(2\,a\,b^{-1})^3}{(a^3\,b)^{-4}}$$

30 points

1. $\dfrac{4^{-2}a^{-4}b^{-6}2^3a^3b^{-3}}{a^{-12}b^{-4}}$

2. $\dfrac{2^3\,a^3\,a^{12}\,b^4}{4^2\,a^4\,b^6\,b^3}$

3. $\dfrac{2^3\,a^{15}\,b^4}{4^2\,a^4\,b^9}$

4. $\dfrac{8\,a^{15}\,b^4}{16\,a^4\,b^9}$

$\boxed{\dfrac{a^{11}}{2b^5}}$

1. Distribute outer exponent. (multiply exponents)

$$\frac{(4\,a^2\,b^3)^{-2}\,(2\,a\,b^{-1})^3}{(a^3\,b)^{-4}}$$

2. Remove negative exponents by "switching positions". Positive exponents do not move.

$$\frac{2^3\,a^3\,a^{-2}\,a^{-4}\,b^{-6}\,b^{-3}}{a^{-12}\,b^{-4}}$$

3. Combine like terms.
(Mult. w/exponents, same base: add exponents)

$$a^3\,a^{12} = a^{3+12} = a^{15}$$

4. Cross cancel.
(Division w/exponents, same base: subtract exponents)

$$\frac{a^{15}}{a^4} = a^{15-4} = a^{11}$$

$$\frac{b^4}{b^9} = b^{4-9} = b^{-5} = \frac{1}{b^5}$$

30 points

Scratch

$2^3 = 8$

$4^2 = 16$

$$\frac{8\,a^{15}\,b^4}{16\,a^4\,b^9} \quad \begin{matrix} & 11 & \\ 2 & & 5 \end{matrix}$$

10 points

h:course:mathrule

STUDY GUIDE # _____

Name: _____ Date: _____

Math Class: _____ Chapter: _____ Page: _____

Concept: _____

Problem	Explanation
(#)	

Scratch