Teaching Mathematics On-Line: Challenges and Solutions

Pamela B. Cohen
Associate Professor of Mathematics
Southern New Hampshire University
p.cohen@snhu.edu

WELCOME TO SNHU ON-LINE

WELCOME LETTER EXCERPT

Southern New Hampshire University

March 1, 2009

Dear Term 4 MAT 050 Students,

Greetings and Happy New Year!! My name is Pamela Cohen. I am your MAT 050 Fundamentals of Algebra instructor. As a full-time faculty member of the Southern New Hampshire University faculty, I regularly teach this course in our undergraduate day division and on-line. I am really looking forward to teaching this course via distance education again this term.

MAT 050: Fundamentals of Algebra **reviews** those algebraic skills necessary for business applications of mathematics. It is a background course for students who have a have not taken a formal mathematics course in quite some time. Although, there is **no official prerequisite** for the course, some **prior high school algebra experience** is truly **necessary** for you to experience success in this class via distance education. Once you complete MAT 050 you will be well prepared for our required math courses, Finite Mathematics and Statistics, as well as quantitative courses from other departments, such as: Accounting; Economics; and Finance.

Mathematics is **not** a spectator sport; you need to **do math to learn math!** You should expect to spend **about one to two hours per day** working through assigned practice problems. Your text does a fairly good job of explaining some very abstract concepts, but it certainly is not your only resource. I will provide lecture notes for each objective in the course.

STUDENT HOMEPAGE

Student Homepage: Beth Farrington

Homepage: Beth Farrington

Introduction

Why hello everyone! My name is Beth. I am a Graphic Designer working on getting my degree in Marketing. This will be my 4th online class at SNHU.

Personal Information

I am 26. I enjoy being outdoors, shopping (of course haha!), going to concerts, and hanging with the friends & fam. I have a 4 year old daughter, who is my world. She is always keeping me on my feet. Haha! Every day is an adventure and I love every minute of it!

Favorite Links

lynda.com

All the latest tutorials and information on graphic design software. This site teaches you how to use certain software programs.

STUDENT INTRODUCTIONS

17	**HW 1B Introductions**	41	0	13

Post your introduction to the class here so that we can get to know each other.

- Who are you?
- Where are you from?
- What is your major at SNHU?
- Share a little about your famly, interests, hobbies, etc. This will help us create the cooperative atmosphere that is so important in developing a successful classroom.
- Attach a photo of yourself if you have one.

INTRODUCTION DISCUSSION

Hi Everybody,

My name is Cameron MacDonald, I am 22 years old and I live in Yarmouth Port, MA. This is my sixth class with SNHU, and also my sixth in the online format. I work in sales for Fastenal Company which is an industrial building supply distributor. Previous to Fastenal, I worked as a flat-rate dealership line service technician for Infiniti and Nissan for two years. My declared major is Business Administration/Organizational Leadership, and I have completed approximately 40 credits to date. I completed two semesters at Wentworth Insititue of Technology in Boston during 2004-2005. I plan to continue through my MBA, most likely with SNHU also.

In my free time, I enjoy restoring old cars, riding my jet-ski, cooking, welding and fabricating, listening to music, and spending time with friends and family. However, most of my free time is spend doing SNHU-related work, not that I mind, I thoroughly enjoy the online format!

I look forward to working with everyone!

Subject: Hello from Cape Cod Reply | Quote | Modify | Set Flag | Remove

Thread: Hello from Cape Cod Reply

Total posts: 4 **Unread posts:** 0 Next Thread ›

Hello from Cape Cod	Cameron MacDonald	3/1/09 3:26 PM
RE: Hello from Cape Cod	Heather Rowe	3/1/09 5:34 PM
RE: Hello from Cape Cod	Teri Diamond	3/2/09 4:24 PM
RE: Hello from Cape Cod	Stephen Soyden	3/2/09 8:14 PM

Refresh Select All Go

WEEKLY DISCUSSIONS

1 **Introductions** — Modify | Remove

Introduce yourself to classmates here. [10 Messages] [7 New]

2 **Learning Styles Inventory** — Modify | Remove

Post the results of your LSI here. It is interesting to see how different we all are. [4 Messages] [3 New]

3 **Using Your Calculator** — Modify | Remove

One objective of this course is for you to learn to use your calculator. [illegible] any trouble with that, post your questions here and we will try to work that out together. [No Messages]

Forum for each chapter

4 **Chapter 1: Real Numbers** — Modify | Remove

[No Messages]

1.1 Vocabulary
1.2 Addition & Subtraction of Integers
1.3 Multiplication & Division of Integers
1.4 Rational Numbers (Fractions, Decimals & Percents)
1.5 Exponents & Order of Operations (PEMDAS)

5 **Chapter 2: Variable Expressions** — Modify | Remove

[No Messages]

2.1 Evaluating Expressions (Formulas)
2.2A Combining Like Terms
2.2B Multiplying Monomials
2.2C The Distributive Property
2.2D Removing Parenthesis to Simplify Expressions

SAMPLE DISCUSSION

Subject: Simple interest B #5

Remove

Dont know why, but I did not get 12%..
I think it is the "fraction" issue..
Anyone have the example so I can see it done??

Jenine

Student Posted Question

Reply

Current Forum: Chapter 3 Applications

Read 17 times

Date: Fri Sep 19 2003 9:30 am

Author: Cote, Michele <m_cote86@minerva.snhu.edu>

Subject: Re: Simple interest B #5

Remove

Hi Jenine – These are my calculations – hope they help.

Student Posted Response

545 = 500 [1 + (r) (.75)]

545 = 500 [1 + .75r]

545 = 500 + 375r
-500 - 500

45 = 375r

Isolate "r" by dividing by each side by 375

45 / 375 = 0.12

r = 12%

Reply

SAMPLE COURSE LECTURE

5) $600, 20 years, 9% compounded semi-annually

$A = P(1 + i)^n$	Future value, compounded semi-annually
$A = 600(1 + .045)^{40}$	A = ?, P = 600, i = .05/2 = .045, n = 20 X 2 = 40
$A = 600(1.045)^{40}$	PEMDAS (Add in Parenthesis)
$A = 600(5.816364538)$	Exponent (y^x) key
$A = 3489.818723$	Multiply
$A = \$3,489.82$	Round to the nearest cent.

Find the present value of each of the following future amounts.

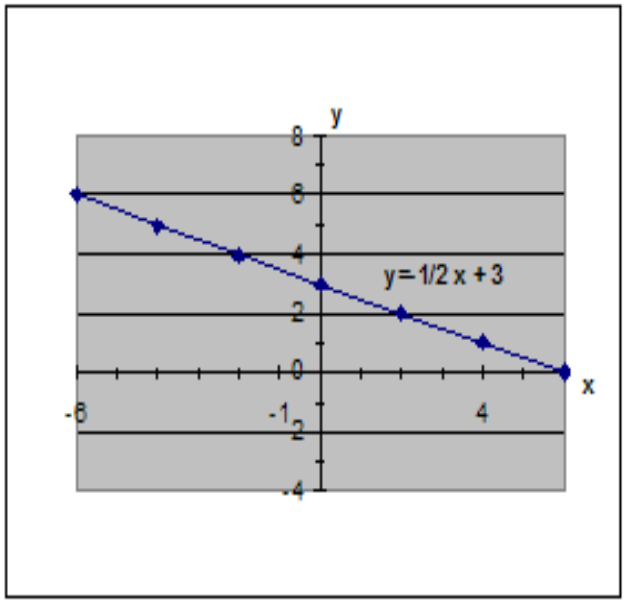
6) $2000 at 7% compounded annually, due in 20 years

$A = P(1 + i)^n$	Present value, compounded annually
$2000 = P(1 + .07)^{20}$	A = 2000, P = ?, i = .07, n = 20
$2000 = P(1.07)^{20}$	PEMDAS (Add in Parenthesis)
$2000 = P(3.869684463)$	Exponent key
$P = 516.8380056$	Divide and Press 1/x (or x^{-1}) key.
$P = \$516.84$	Round to the nearest cent.

SAMPLE COURSE LECTURE

2) $y = -1/2\,x + 3$ I could again chose $x = -1, 0\ 1$, but to **avoid getting stuck with fractions**, I will instead choose $x = -2, 0, 2$.

x	y = -1/2 x + 3	y	(x,y)
-2	y = -1/2(-2) + 3	4	(-2,4)
0	y = -1/2(0) + 3	3	(0,3)
2	y = -1/2(2) + 3	2	(2,2)



PRELIMINARY PRE-TESTS

Due by Thursday, March 5th.

#2 Take, **check your answers** and submit the Chapter 1 Review p.73-74: 1-38.

#3 Take, **check your answers** and submit the Chapter 2 Review p.106-107: 1-30 **only** (We do not cover objective 2.3: translations of words into expressions.)

Consider these Chapter Reviews as **Pre-tests**. I *do not* expect this work to be 100% correct. Do not worry about going through each objective in detail before completing this assignment. Try each problem and check your own answers in the back of the text to diagnose areas from the first two chapters that need special attention. Let me know if you have no idea how to solve a particular problem. Later this week you will go back through both chapters in much greater detail.

TEST DISCLAIMER

MAT 050 Section X3800
Professor Cohen
Test #2B (Due by 10 am Monday, 2/9) – Some of you are famous!!
Use the View/Complete Assignment link or fax (603.218.6064)

Name: _____

By submitting this exam, you are certifying that you neither gave nor received assistance! In other words, this exam is your own work. Solve each problem, showing any work and the final answer.

A. Solve each equation. Show all work.

1) $-\frac{2}{3}x = -24$

2) $9 - 2m = 1$

3) $-8x - 4 + 15x = 10$

4) $3(1 - 2x) + 5x = 15$

WEEKLY ANNOUNCEMENTS

Sun, Mar 08, 2009 -- *Week 2: Chapter 3 Solving Linear Equations* Posted by: Pamela Cohen

This week's material is probably the most important topic of the entire course. Solving a linear equation is the algebraic skill that we use all the time in "real life". If possible, try to cover a little material each day (1 objective) rather than wait until the weekend to have it all pile up.

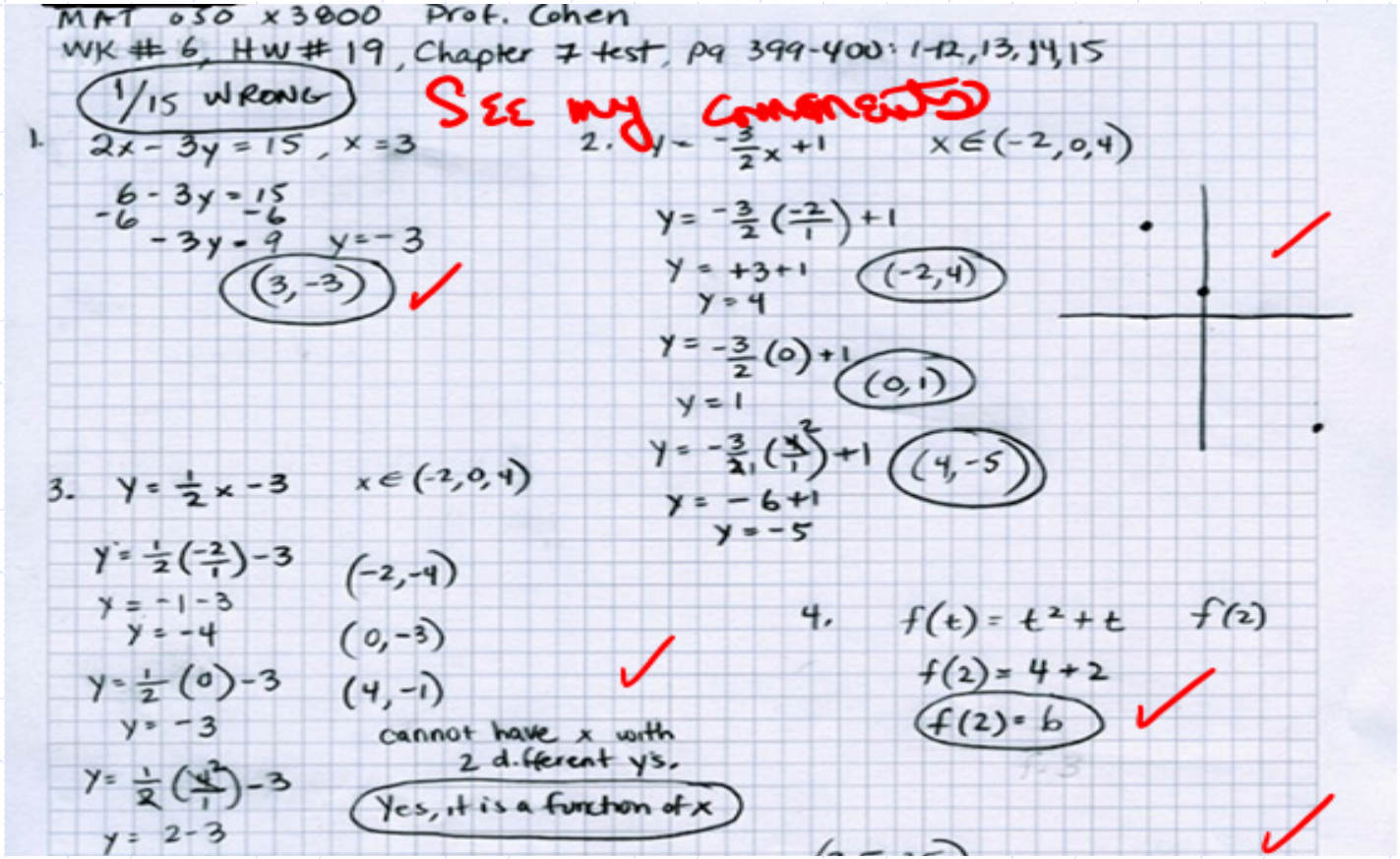
Most of your work this week (HW 7-10) deals with solving the equations. There are a few applications to try ("dreaded word problems"). I'd like to see you discussing these problems on our discussion board. Next week we will cover applications of linear equations in greater detail.

Chapter Outline

- 3.1A-C One-Step Equations ($x + a = b$ and $ax = b$)
- ** 3.1D Percent Equations (%/100 = is/of Approach) - My approach is different from your text and probably different from what you may have done in the past. Please follow my lecture notes on this topic before you follow your text.
- 3.2 Two-Step Equations ($ax + b = c$)
- 3.3 Longer Equations ($ax + b = cx + d$) & Equations with Parenthesis
- **Omit 3.5 & 3.6**

Test 1 - I will post Test 1 in a Test folder in the Assignments area on Friday, 3/13 covering Chapter 1 & 2 (HW 2-6). It will be due on Monday, 3/16 with this week's homework.

STUDENT HW SCANNED



MAT 050 x3800 Prof. Cohen
WK # 6, HW # 19, Chapter 7 test, pg 399-400: 1-12, 13, 14, 15

1/15 WRONG

SEE my COMMENTS

1. $2x - 3y = 15$, $x = 3$

$6 - 3y = 15$
$-6 \quad -6$
$-3y = 9 \quad y = -3$

$(3, -3)$ ✓

2. $y = -\frac{3}{2}x + 1 \quad x \in (-2, 0, 4)$

$y = -\frac{3}{2}\left(\frac{-2}{1}\right) + 1$
$y = +3 + 1$
$y = 4$ $(-2, 4)$

$y = -\frac{3}{2}(0) + 1$
$y = 1$ $(0, 1)$

$y = -\frac{3}{2}\left(\frac{4}{1}\right) + 1$
$y = -6 + 1$
$y = -5$ $(4, -5)$

✓

3. $y = \frac{1}{2}x - 3 \quad x \in (-2, 0, 4)$

$y = \frac{1}{2}\left(\frac{-2}{1}\right) - 3$
$y = -1 - 3$
$y = -4$ $(-2, -4)$

$y = \frac{1}{2}(0) - 3$
$y = -3$ $(0, -3)$

$y = \frac{1}{2}\left(\frac{4}{1}\right) - 3$
$y = 2 - 3$ $(4, -1)$

cannot have x with 2 different y's.

Yes, it is a function of x

✓

4. $f(t) = t^2 + t \quad f(2)$

$f(2) = 4 + 2$
$f(2) = 6$

✓

✓

STUDENT HW FAX

3X

HW 21 Slope/Intercept Worksheet

For each equation, find the slope and y-intercept. Remember that each equation must first be in y-form to find the slope and y-intercept.

Equation	y-form	Slope	y-Intercept
1) $y = -2/3\,x - 3$	$y = \frac{-2}{3}x - 3$ ✓	$\frac{-2}{3}$ ✓	$(0,-3)$ ✓
2) $y = 3x$	$y = 3x + 0$ ✓	3 ✓	$(0,0)$ ✓
3) $y - 2x = 5$ $+2x \quad -2x$ $y = 2x + 5$	$y = 2x + 5$ ✓	2 ✓	$(0,5)$ ✓

STUDENT HW PDF

1) $2x - 3y = 15$ find ordered pair $x = 3$

$2(3) - 3y = 15$

$6 - 3y = 15$

$-3y = 9$

$y = -3$

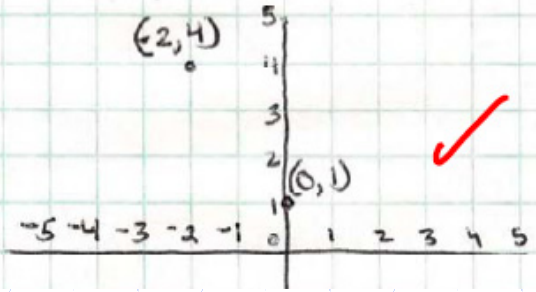
$(3, -3)$ ✓

2) $y = -\frac{3}{2}x + 1$ for $x \in \{-2, 0, 4\}$

$y = +\frac{3}{2}(+2) + 1$ $(-2, 4)$

$y = 4$ $(0, 1)$

$y = -\frac{3}{2}(4) + 1$ $(4, -5)$

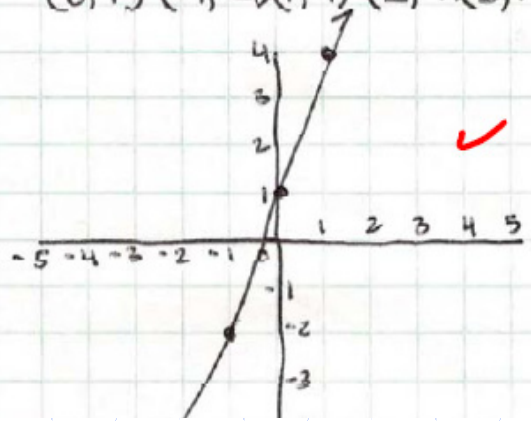


✓

6) (3.5, 25), (4.0, 30), (5.2, 45), (5.0, 35), (4.0, 42), (6.3, 12), (5.4, 34) This relation is not a function. → (4.0, 30) (4.0, 42) ✓

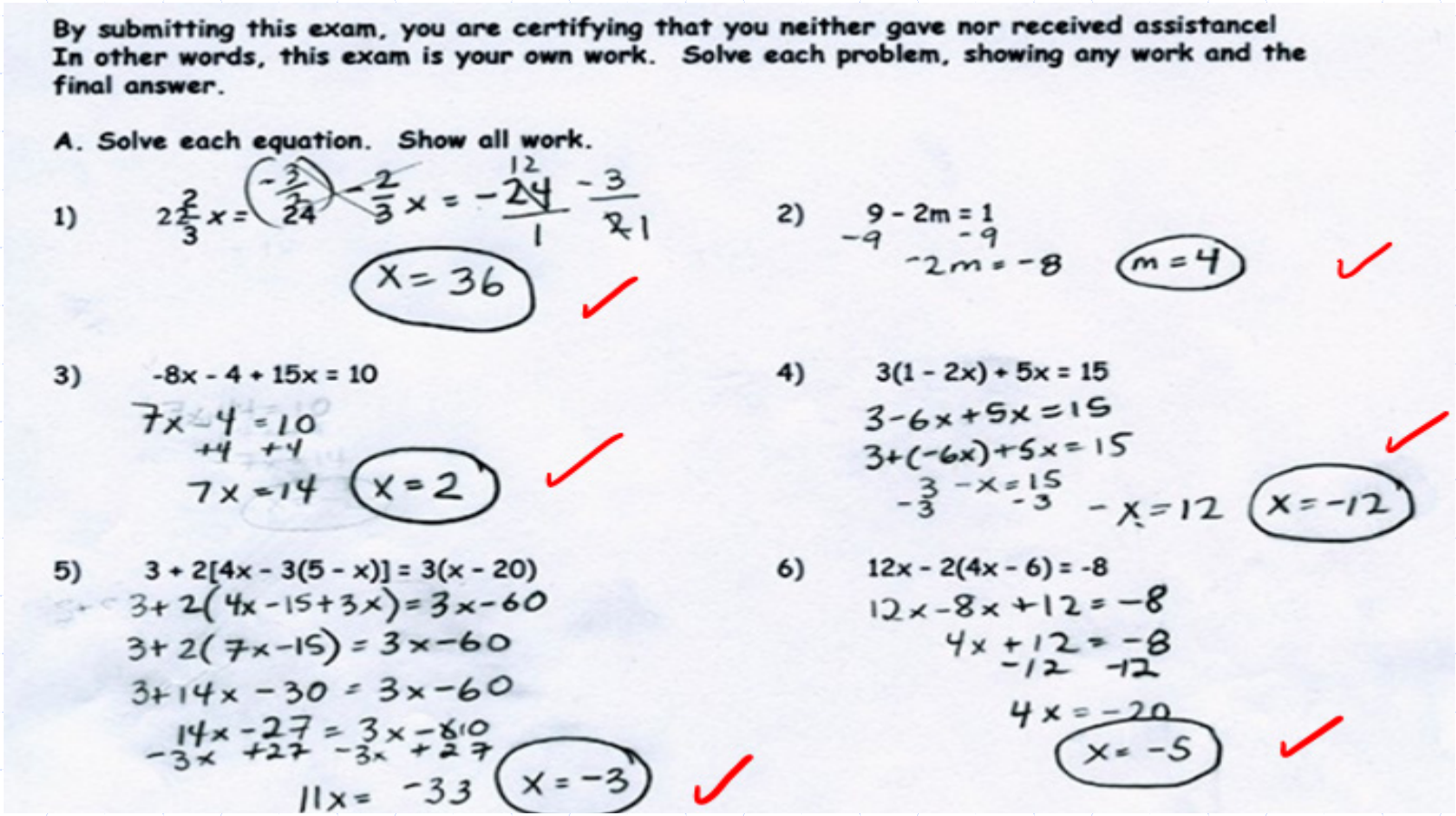
7) Graph $y = 3x + 1$

(0, 1) (-1, -2) (1, 4) (2, 7) (3, 10)



✓

STUDENT TEST SCAN



By submitting this exam, you are certifying that you neither gave nor received assistance! In other words, this exam is your own work. Solve each problem, showing any work and the final answer.

A. Solve each equation. Show all work.

1) $2\frac{2}{3}x = -\frac{2}{3}x = -24$ $\quad x = 36$ ✓

2) $9 - 2m = 1$, $-9 \quad -9$, $-2m = -8$ $\quad m = 4$ ✓

3) $-8x - 4 + 15x = 10$, $7x - 4 = 10$, $+4 \quad +4$, $7x = 14$ $\quad x = 2$ ✓

4) $3(1 - 2x) + 5x = 15$, $3 - 6x + 5x = 15$, $3 + (-6x) + 5x = 15$, $-3 \quad -x = 15 \quad -3$, $-x = 12$ $\quad x = -12$ ✓

5) $3 + 2[4x - 3(5 - x)] = 3(x - 20)$, $3 + 2(4x - 15 + 3x) = 3x - 60$, $3 + 2(7x - 15) = 3x - 60$, $3 + 14x - 30 = 3x - 60$, $14x - 27 = 3x - 60$, $-3x \quad +27 \quad -3x \quad +27$, $11x = -33$ $\quad x = -3$ ✓

6) $12x - 2(4x - 6) = -8$, $12x - 8x + 12 = -8$, $4x + 12 = -8$, $-12 \quad -12$, $4x = -20$ $\quad x = -5$ ✓

STUDENT TEST WORD

E. Find the missing value in the compound interest formula.

20) P = $2800, 6% compounded quarterly for 7 years, A = ? $A=P(1+i)^n$

A= 2800(1 + .06)^28
A= 2800 (1.06)^28
A= 2800 (5.111686697)
A = 14312.72275
A = $14312.72

$i = .06/4 = .015$

$A = 2800(1+.015)^{28}$

$4248.22

21) A = $2000, 9% compounded semi-annually for 4 years, P = ? $A=P(1+i)^n$

2000= P (1 + .045)^8
2000= P(1.045)^8
2000= P (1.422100613)
P = 1406.37025
P = $1406.37

Teaching Opportunities

SNHU On-Line teaching application available at:

www.snhu.edu

→ Academics
→ SNHU On-Line
→ SNHU On-Line Faculty
→ Adjunct Faculty Positions for Online Education

QUESTIONS??????

For additional information:

Contact me at p.cohen@snhu.edu