

**WeBWorK,
Web-based Homework System**

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Presentation Outline

- Introductions
- WeBWorK overview
- ● Sample problems/assignments
 - Existing library of problems
 - Writing your own problems
- ● Show a real WeBWorK course
 - Try it yourself!
- Questions & Answers
- Contact info

WeBWork Overview

- free to educational & non-profit organizations
- on-line homework
- ● individualized assignments
 - may individualize deadlines
- ● students do not have to complete assignment at once -
may print it out, work on it, then log back in and submit
answers
 - graded by computer
 - immediate feedback:
students may correct errors and resubmit answers
- big library of problems (but you can write your own)

Individualized Problems

- ● Problem Solve for x : $\log_2 x^3 = 5$
Answer $2^{5/3}$ (or 3.1748)
- Problem Solve for x : $\log_3 x^8 = 7$
Answer $3^{7/8}$ (or 2.615)
- ● Problem Let $f(x) = 2 \sin^5(x)$. Then $f'(x) =$ ____
Answer $10 \sin^4(x) \cos(x)$
- Problem Let $f(x) = 3 \cos^4(x)$. Then $f'(x) =$ ____
Answer $-12 \cos^3(x) \sin(x)$

Grading

- **Problem** Solve for x : $\log_2 x^3 = 5$

Will accept answers:

$$2^{(5/3)}$$

$$2^{1.667}$$

$$3.1748$$

$$3.175$$

but not

$$2^{1.67}$$

$$3.17$$

Grading

- Some problems (used in earlier courses) don't allow functions in answers, e.g.:

Problem Evaluate: $8^{1/3}$

Will accept answer:

2

but not

$8^{(1/3)}$

- Problems used in more advance courses encourage use of functions (and all necessary parentheses!), e.g.

$2^{5/3}$

is interpreted as $\frac{2^5}{3}$, not as $2^{5/3}$.

Sample Assignment

<http://zimmer.csufresno.edu/~mnogin/Math105-Nogin.benton.2.pdf>

Existing Library

- Algebra
- Trigonometry
- Pre-Calculus
- Calculus
- Differential Equations
- Probability
- Statistics
- Linear Algebra
- advanced Math problems
- Physics

Modifying/Writing Your Own Problems

Sample Code:

```
##DESCRIPTION
##KEYWORDS('logarithms,exponents')
##TYPE('equation')
##ENDDescription
```

```
DOCUMENT();
loadMacros(
  "PG.pl",
  "PGbasicmacros.pl",
  "PGchoicemacros.pl",
  "PGanswermacros.pl",
  "PGauxiliaryFunctions.pl");
```

```

TEXT(&beginproblem);
$showPartialCorrectAnswers = 0;

$A = random(3,9,2);
$B = random(2,4,1);
$C = random(-9,9,1);
while ($A==$C) {$C = random(-9,9,1);}
$ans = ($B**($C/$A));

BEGIN_TEXT;
Solve for  $x$ :

$$\log_B x^A = C$$

 $x =$   $\{ans\_rule(20)$ 
END_TEXT

```

```
&ANS(std_num_cmp($ans));
```

```
ENDDOCUMENT();
```

Real WeBWork Course

<http://zimmer.csufresno.edu/~mnogin/math105fall06/>

Try it yourself!

- Go to `http://webwork.csufresno.edu/webwork2/`
- Click on [Math105-Nogin](#)
- Type “prof1” (“prof2”, “prof3”, etc.) as both username and password
- Feel free to do anything you want – try problems, browse the library, create accounts, add users, etc.

Contact Info

`mnogin@csufresno.edu`

`http://zimmer.csufresno.edu/~mnogin/`

`http://zimmer.csufresno.edu/~mnogin/webwork.html`