

# Welcome To Math 34A!

## Differential Calculus

### Instructor:

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South Hall 6701

### Office Hours:

T R 11-11:50, T 3:45-4:35 Details on Gauchospace.

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Math 34A is about...

- Problem-solving using reasoning, algebra and arithmetic
- Turning English into Math (and vice versa)

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Math 34A is **not** about...

- Memorizing formulas
- Rote computations

Here's a blog that explains this point well.

**Math with Bad Drawings: Just Memorizing**

Thankfully, we don't make very good robots.

# Do You Have An i>clicker?

A = Yes, B = No

# Everything Is On Gauchospace

See <https://gauchospace.ucsb.edu/>

- Syllabus
- Homework:
  - On WeBWorK (link on Gauchospace)
  - Due each lecture day before the end of the day
  - First one is due Thursday, Jan 6th!
- Dates of midterm exams and final exam.
  - First midterm is Jan 25! (Yikes!)
- Grading system
- Consider signing up with CLAS = Campus Learning Assistance Services – More info on Gauchospace.

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  - It's quite good!
  - These lectures are not just presenting the textbook– they complement it.
  - Your homework problems are pulled from the textbook.
  - To be ready for exams you should follow both the textbook and the lectures.

# Example Puzzle

## A New Favorite Puzzle

Which is bigger?

$$\sqrt[10]{10} \quad \text{or} \quad \sqrt[3]{2}$$

Hint: They differ by less  
than 0.001.



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Idea: The number  $2^{10} = 1024$  is often approximated to a “rounder” number to convey sizes with computer hardware.

# Let's Get Started!

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# More Problems!

**3.** Solve for  $x$ :  $2x + 7 = ax + k$

$$A = (2 - k)/(a - 7) \quad B = (k - 7)/(2 - a)$$

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**Moral:** Parentheses are awesome!

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Answer:  $\boxed{L = \frac{W}{W-1}}$

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$$A = 0.75\% \quad B = 30\% \quad C = 7.5\% \quad D = 75\%$$

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$$A = 600 \quad B = 60 \quad C = 6 \quad D = 0.6$$

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# You Try It!

**3.** Click A,B,C,D as you do these problems

(A) What is 20% of  $x$ ?

(B) What is 70% as a fraction?

(C) What is  $x\%$  of 50?

(D) What is  $\frac{x}{x+1}$  as %?

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Answers: (A)  $x/5$  (B)  $7/10$  (C)  $x/2$  (D)  $\left(\frac{100x}{x+1}\right)\%$

How many did you get right?

$A = 4$  😊  $B = 3$   $C = 2$   $D = 1$   $E =$  😞

# Mixing Paint

4. If I combine 5 liters of blue paint with 15 liters of red paint, what percentage of red paint is in the combination?

*A* 15%   *B* 5%   *C* 75%   *D* 25%   *E* Other

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5. If I combine  $x$  liters of blue paint with  $y$  liters of red paint, what percentage of blue paint is in the combination?

A  $\left(\frac{x}{x+y}\right)\%$    B  $\left(\frac{y}{x+y}\right)\%$    C  $\left(\frac{100y}{x+y}\right)\%$   
D  $\left(\frac{100x}{x+y}\right)\%$    E Other

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**6.** Express  $x\%$  of 4 plus  $y\%$  of 3 as a percentage of 12.

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**6.** Express  $x\%$  of 4 plus  $y\%$  of 3 as a percentage of 12.

Idea: Break down the problem into simple steps **in English**. Explain what I'm doing **to myself**.



That's it. Thanks for being here.

