Welcome To Math 34A! Differential Calculus

Instructor:

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South Hall 6431X (Grad Tower, 6th floor, blue side, first door on the right)

Office Hours:

MTWR after class 2:00-3:00, and by appointment. Details on Gauchospace.

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 the iClicker app?

A = Yes, B = No

To join the class, you can go to `https://join.iclicker.com/D7Q6X`

Everything Is On GauchoSpace

See https://gauchospace.ucsb.edu/

- Syllabus
- Homework:
  - On WeBWorK (link on GauchoSpace)
  - Assigned each class day, due following night at 11:59 PM
  - First one is today!
- Information about discussions and TAs
- Dates of midterm exams and final exam. (Once I decide them)
- Grading system
- Consider signing up with CLAS = Campus Learning Assistance Services – More info on Gauchocpase.

Syllabus

Let's go over the Syllabus now

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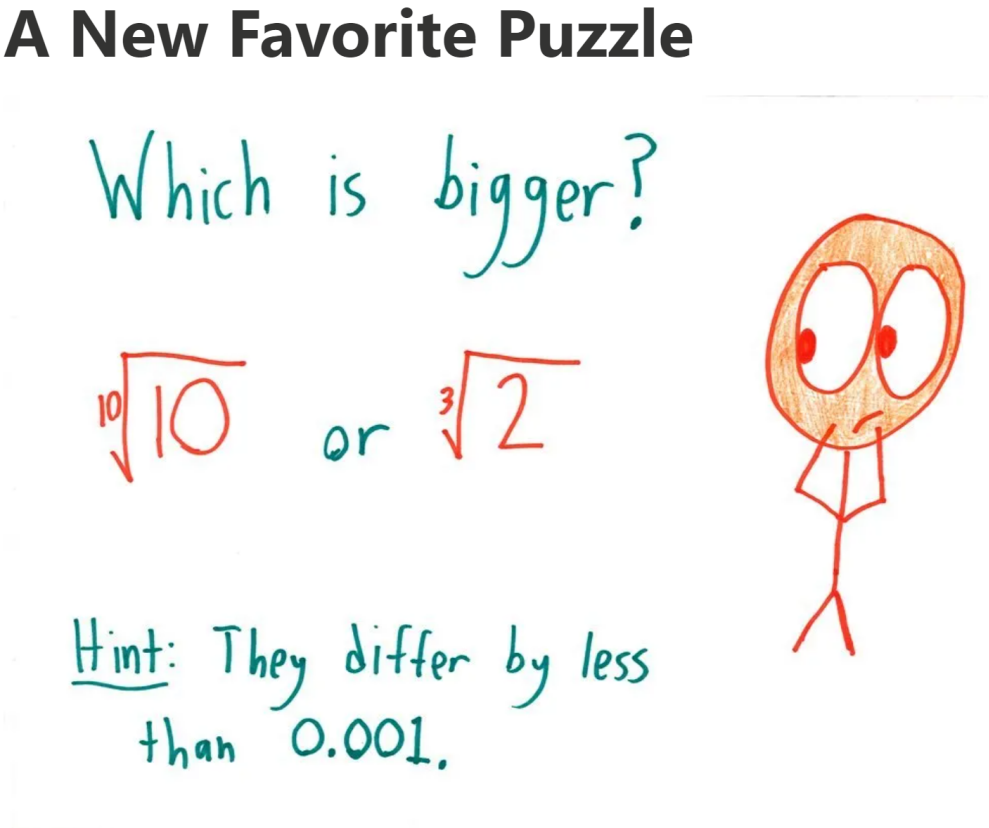
- You should read the textbook!
  - It's quite good!
  - These lectures are not just presenting the textbook– they complement it.
  - Your homework problems are pulled from the textbook.
  - To be ready for exams you should follow both the textbook and the lectures.

Example Puzzle



(From Math with Bad Drawings)

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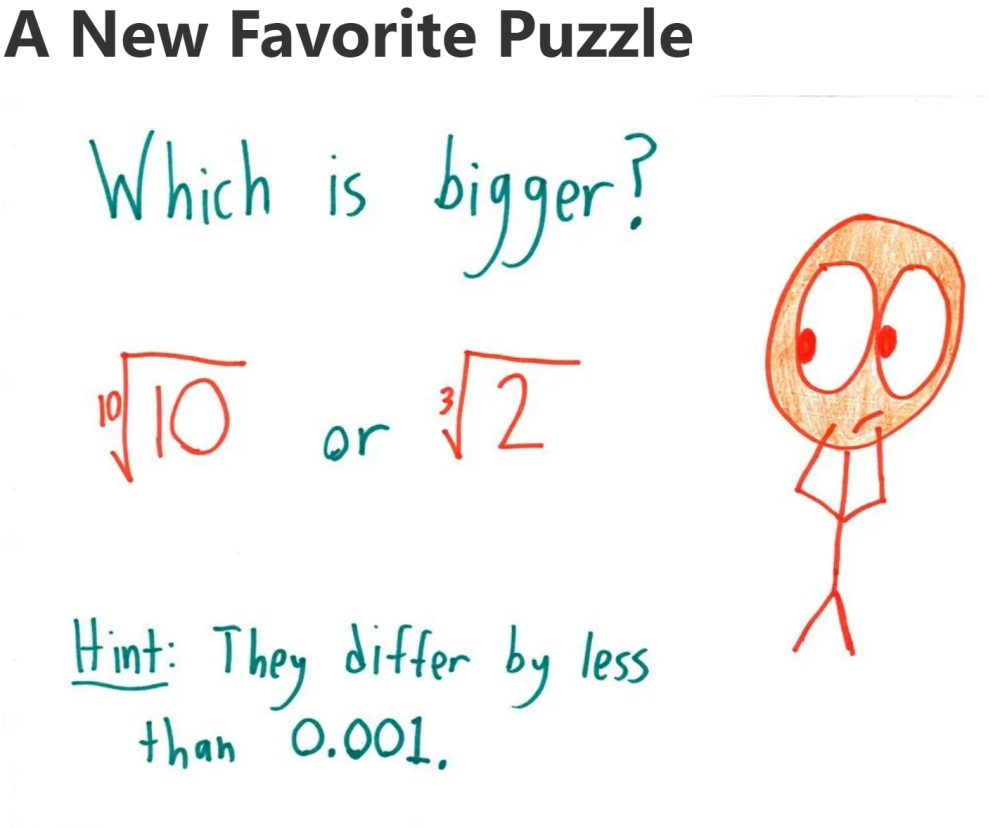

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Idea: The number $2^{10} = 1024$ is often approximated to a "rounder" number to convey sizes with computer hardware.

Another Warm-up Puzzle

I was born on the second day
of the last week
of the second to last month
of the last year
of the second to last decade
of the last century
of the second millennium
of our calendar system.

What is my birthdate?

Let's Get Started!

1. Solve for x: $4x + 7 = 12$

A $= 3$ B $= 6$ C $= 5/4$ D $= 19/4$ E $=$?

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A $= c/a$ B $= bc/a$ C $= (c+b)/a$ D $= c-b/a$ E $= (c-b)/a$

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Answer: E

More Problems!

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

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

C $= (k - 7)/(a - 2)$ D $= k - 7/a - 2$ E $=?$

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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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2. What is 20% of 30?

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

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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 $\dfrac{x}{x+1}$ as %?

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(A) What is 20% of x?

(B) What is 70% as a fraction?

(C) What is x% of 50?

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

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

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?

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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?

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

$$D\ \left(\frac{100x}{x+y}\right)\% \quad E \text{ Other}$$

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One More Problem!

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

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

That's it. Thanks for being here.