Welcome To Math 34A! Differential Calculus

Instructor:

Trevor Klar, `trevorklar@math.ucsb.edu`

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 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 Gauchocpase.

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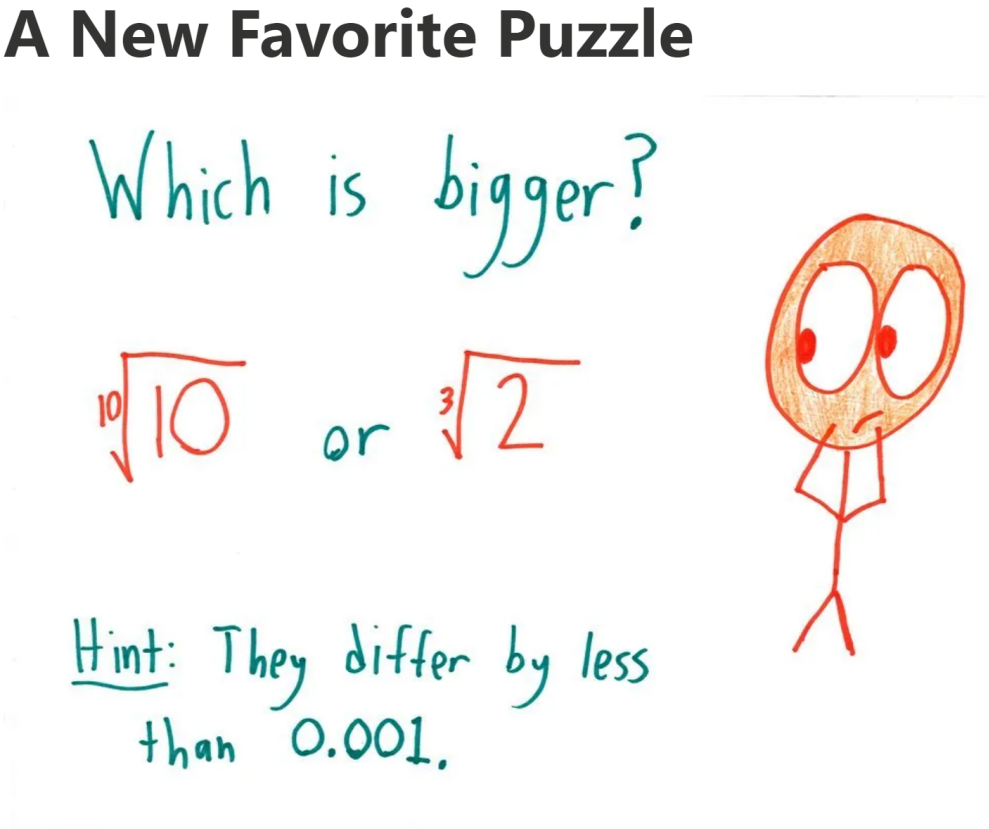
- You should read the textbook!
  - It's quite good!
  - These lectures are not just presenting the textbook– they complement it.
  - Your homework problems are pulled from the textbook.
  - To be ready for exams you should follow both the textbook and the lectures.

Example Puzzle



(From Math with Bad Drawings)

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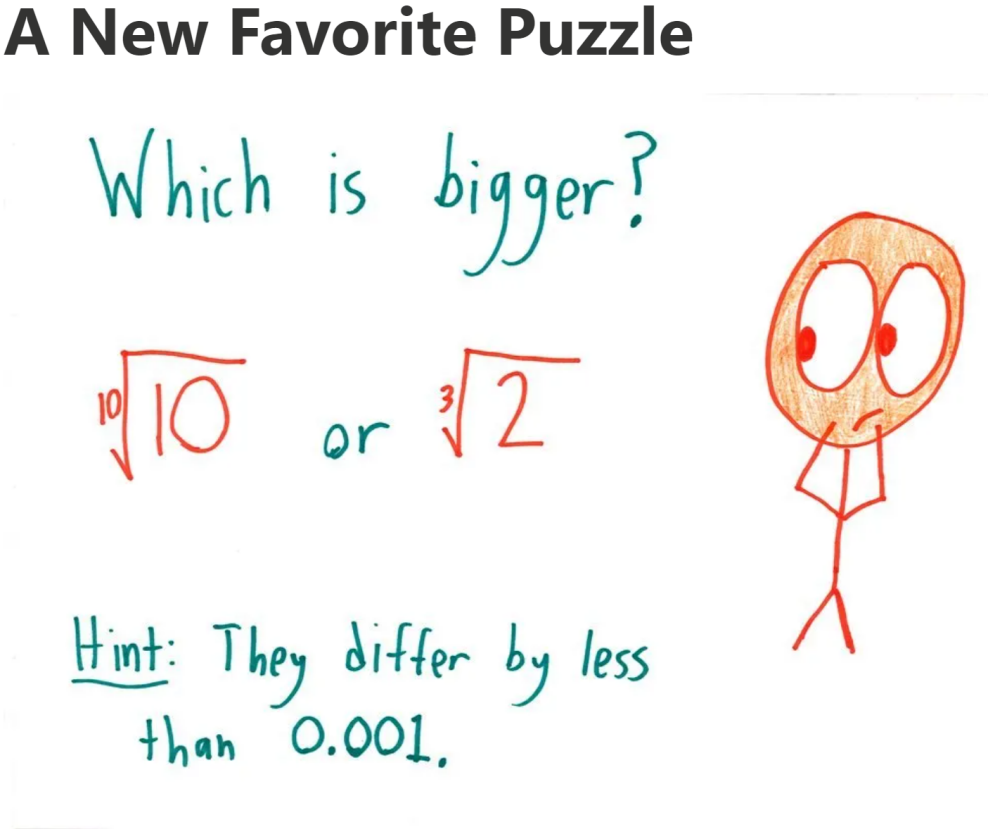

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Idea: The number $2^{10} = 1024$ is often approximated to a "rounder" number to convey sizes with computer hardware.

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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More Problems!

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

A $= (2 - k)/(a - 7)$ 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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1. What is 3/4 as %?

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

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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?

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?

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

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

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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.