

Teaching CS70...

What do you think?

Goals:

- Think rigorously and creatively.

- Concepts in discrete math: proofs, stable marriage, number theory, coding, graphs, counting.

- Teach them probability: conditional probability, and concentration.

- Intuition from discrete and eventually continuous models and experience.

Staff focus.

Everyone: Goals.

For TAs: the student.

Teach, explain, encourage, and point of connection to course.

Staff attitudes.

Belief in the mission.

e.g. Learn to think, reason, and some useful stuff.

Potential to be life-changing.

Here to help.

“What would Dave Wagner do?”

Learning to teach.

What advice do you give? What do you do with students?

How do I learn?

How do I see others learn? or not?

What seems to work when we teach?

Rigorously measure?

Questions.

Do prereq's help? Which ones?

How do you measure?

Does homework help? Is the time worth it.

[See here.](#)

Calculus

What is the first half of calculus about?

The slope of a tangent line to a function at a point.

Slope is rise/run. Oh, yes: $\lim_{h \rightarrow 0} \frac{f(x+h) - f(x)}{h}$.

Chain rule? Derivative of a function composition.

Intuition: composition of two linear functions?

$f(x) = ax$, $g(x) = bx$. $f(g(x)) = abx$. Slope is ab .

Multiply slopes!

But...but...

For function slopes of tangent differ at different places.

So, where? $f(g(x))$

slope of f at $g(x)$ times slope of g at x .

$$(f(g(x)))' = f'(g(x))g'(x).$$

Product rule?

Idea: use rise in function value!

$$d(uv) = (u + du)(v + dv) - uv = udv + vdu + dudv \rightarrow udv + vdu.$$

Any concept:

A quick argument from basic concept of slope of a tangent line.

Perhaps.