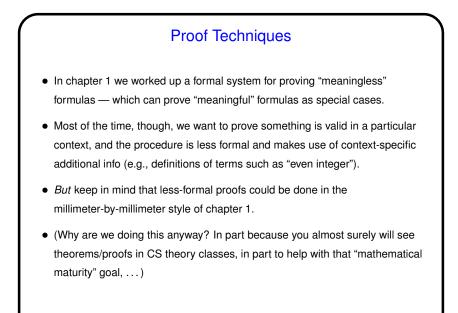


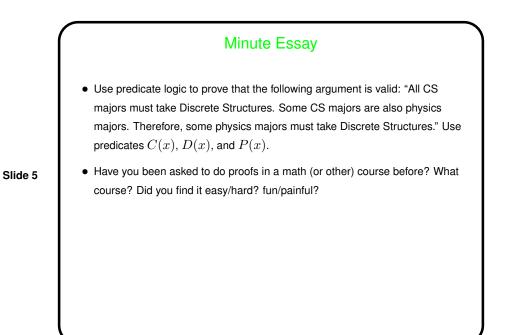
Slide 3



Proof Techniques, Continued

- Suppose you have a "conjecture" (e.g., "all odd numbers greater than 1 are prime"). How to (try to) prove it?
- Well, first must sometimes decide whether to prove it. Do you think it's true?
- If it's a statement about all integers, etc., often helpful to start with "inductive reasoning" try some examples and see what happens.
- If one doesn't work? "Counterexample" that shows conjecture false.
- If all succeed? Just means you didn't find a counterexample. So, turn to "deductive reasoning" to prove — subject of first part of chapter 2.
- Lots of examples/problems will be simple stuff about integers. Why? Something where we supposedly all know the "context".

Slide 4



Minute Essay Answer		
• Hypotheses: $(\forall x)(C(x) \rightarrow D(x), (\exists x)(C(x) \land P(x))$ Conclusion: $(\exists x)(P(x) \land D(x))$ Proof:		
1.	$(\forall x)(C(x) \rightarrow D(x))$	hyp
2.	$(\exists x)(C(x) \land P(x))$	hyp
3.	$C(a) \ \land \ P(a)$	2, ei
4.	$C(a) \rightarrow D(a)$	1, ui
5.	C(a)	3, sim
6.	P(a)	3, sim
7.	D(a)	4, 5, mp
8.	$P(a) \wedge D(a)$	6, 7, con
9.	$(\exists x)(P(x) \land D(x))$	8, eg

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