cosx prime ± sinx+c
antiderivative of sinx=-cosx+c

therefore $f(x)=x^3-4x^{3/2}-3x^2-8x+10$

note: in type I we are given initial values for f, f', f'', f''', ... so we can evaluate the c's as we go

Type II

find f(x):

1. $f''(x)=6x^2-12x$ and are given $f(-1)=-5/2$ and $f(2)=-10$

   notice no f' value is given ±

notice the above is a polynomial of degree 3

4 antiderivatives should give 4 terms in polynomial degree 3

2 antiderivatives :WHPVSROQPLDGJUH

[illegible]

too often, students get $x^6/360+c_1+c_2$... but that's just one constant ± they're all the same, if you just take some unknown number plus another unknown number whereas as above you can't combine the pieces because they all have different exponents of x ± and that comes about by finding each and every antiderivative

Practice questions

from the textbook, section 4.9

questions 1-12, 15, 17, 18, 20-22 (basic antiderivatives)

questions 25, 26, 29-37, 39-41, 43, 46, 48 (IVP)

questions 49, 51, 52 (miscellaneous)

questions 59-69 (everybody should read them but if you're physics students you should try them)

note: professor will post a sheet on solving systems and equations

there are 4 examples; all are taken from from the professor's previous Intro to Calculus II final exams

these are the kinds of questions you'll be expected to be able to answer on an exam

reminder: office hours later this morning; send the professor an email in advance to let him know you have questions

questions

s: can we prove the difference rule by multiplying by -1 and then use the sum rule?

P: there are 2 ways, as I said ± one way is to do what we did in the proof but change every sign to the minus sign; the other way is what you're suggesting so yes you can do that

I prefer using this way because the way we did it in class through the proof is ugly

S2: can we use another way to solve systems equations for example using matrices?

P: yes, but the kinds of questions we get were developed through partial fraction expansions ± so you'll find these things come in particular patterns. They aren't just randomly generated. When we try to do systems of equations there's a process we follow that's very step by step ± and if you have no pattern that's the best way to go. But if the equations have a relationship there is a nicer way to get there by using elimination ± which is in a way what matrices is, but you're going through it in a formal way. If you try doing these by straight elimination it's faster and easier than matrices, but matrices are way easier than doing it by elimination

I recommend you try it by matrices, and by elimination, and by substitution ± but the latter