The problems on this worksheet are for in-class practice during tutorial. You are free to collaborate and to ask for help. They don't count for course credit, but it's a good idea to make sure you know how to do everything before you leave tutorial – similar problems may show up on a test or assignment.

Evaluate the following integrals:

1. $\int \frac{e^{\sqrt{x}}}{\sqrt{x}}\,dx$
2. $\int \frac{\frac{1}{x}+1}{x^2}\,dx$
3. The substitution for the last integral should have been clear. Note that the numerator can be written as $\frac{x+1}{x}$, so the whole integral can be re-written as $\int \frac{x+1}{x^3}\,dx$. Do you still want to do the integral by substitution, or is there a "better way"? Do your answers agree?
4. $\int \tan^2(x)\sec^2(x)\,dx$
5. $\int \tan^2(x)\,dx$
6. $\int_0^1 2x(1-x^2)^4\,dx$
7. $\int x^3 e^x\,dx$
8. $\int e^{2x}\sin(3x)\,dx$
9. $\int x\sec^2(x)\,dx$
10. $\int x\sqrt{x-2}\,dx$. (Try this once using substitution, and again using integration by parts.)
11. $\int e^{\ln x}\,dx$. (With a bit of work you can do this by substituting $u = \ln x$ and noting that $x = e^u$. Why is this a bad idea?)
12. $\int \sin^5(x)\cos^6(x)\,dx$
13. $\int \sin(x)\sin(2x)\,dx$
14. $\int \sec^3(x)\,dx$.
15. $\int \sec^5(x)\,dx$
16. $\int \sqrt{9-x^2}\,dx$
17. $\int \frac{8}{\sqrt{x^2+2}}\,dx$
18. $\int \frac{5x^2}{\sqrt{x^2-10}}\,dx$. (This can be done with a secant substitution, but you might want to try hyperbolic functions instead.)