M408S Homework 6. Due Monday, February 25

For each of the following integrals, explain the steps you would use in computing them. You do not have to finish the integrals, but you should get far enough to say "and the rest can be done by such-and-such method". For instance, if the integral is $\int \frac{dx}{e^x-1}$, a possible answer would be "Let $u = e^x$, so $du = e^x dx$ and $dx = du/u$. This turns the integral into $\int \frac{du}{u(u-1)}$, which we can do by partial fractions."

There may be more than one right method for some of these integrals.

1) $\int \theta \tan^2(\theta) d\theta$

2) $\int \sin(\sqrt{x}) dx$

3) $\int \frac{dx}{x^2+4x+5}$

4) $\int \frac{x^4+1}{(x^2+1)^2} dx$.

5) $\int \sin^4(x) \cos^4(x) dx$.

6) $\int x^3 e^{x^2} dx$

7) $\int \frac{d\theta}{1+\cos(\theta)}$

Page 527, problems 13, 16, 23 and 34.