Homework Assignment for Week 16

Assigned Dec 29, 2011.

1. Section 8.4: Problems: 3, 5, 9, 13, 14, 39, 43.

2. We showed in class how to derive a reduction formula from $\int \sin^4(x) \cos^4(x)\, dx$ to $\int \sin^4(x) \cos^2(x)\, dx$. Apply similar procedure to obtain general reduction formula from $\int \sin^{2p}(x) \cos^{2q}(x)\, dx$ to $\int \sin^{2p-2}(x) \cos^{2q}(x)\, dx$ and to $\int \sin^{2p}(x) \cos^{2q-2}(x)\, dx$ and check your answer with the formula on the integration table.

3. Do the same for the integral $\int \tan^m(x) \sec^n(x)\, dx$ using the formula $d\tan(x) = \sec^2(x)\, dx$ and $d\sec(x) = \tan(x) \sec(x)\, dx$. There are four cases depending on whether m, n is even or odd, respectively. You should be able to turn it into polynomial integration for three cases. Then work out the reduction formula for the remaining case as in Problem 2.

4. Chap 8: Pick as many as time permits among problems 129-194. This is an efficient way of reviewing all the techniques you learned from this Chapter.