

Math 231: Honors Question 2

Due Wednesday February 14
(turn in with your midterm)

Instructions: *Do this problem **on your own**. Do not talk to others, do not consult the internet. You can use your book and your notes (indeed the solution can be obtained just using the ideas of Chapter 7). This will count as 10 points on the first midterm. I will not give any hints (other than those I've already given in class!).*

Consider an integral of the form

$$\int \sin^n(x) \cos^m(x) dx$$

where n and m are integers.

As we know, if m and n are positive, then we can compute such an integral using the methods of Section 7.4. Explain why you can always compute such an integral, for **any** choice of integers m and n . I do not expect you to give a closed form solution for the integral, but rather explain how you could do the computation (i.e. reduce it to a computation you know how to do), based on different possibilities for m and n .

Please try to keep your solution to one page. Be careful that you include all possibilities for m and n .