

# Take Home Quiz

Due Friday, April 1 (no joke!)

NAME:

This is an EXTRA quiz and is optional in the sense that I will only count 4 out of the total of 6 quizzes for the semester. In order to get credit for this quiz, your solution must be PERFECT. Of course, the definition of perfect is subjective - I am unlikely to fail you for small errors like a sign error, etc. However, you will receive 0/15 on the quiz if there are ANY misunderstandings about spherical coordinates or integration. Please turn your quizzes in to me in class on April 1 (or before that in my office). I will accept no late quizzes.

Choose ONE of the problems below.

1. Evaluate the iterated integral

$$\int_0^1 \int_{\sqrt{1-y^2}}^{\sqrt{8-y^2}} \int_{\sqrt{x^2+y^2}}^{\sqrt{16-x^2-y^2}} x^2 + y^2 + z^2 dz dx dy + \int_1^{\sqrt{8}} \int_0^{\sqrt{8-y^2}} \int_{\sqrt{x^2+y^2}}^{\sqrt{16-x^2-y^2}} x^2 + y^2 + z^2 dz dx dy$$

by changing to spherical coordinates.

2. Evaluate the iterated integral

$$\int_0^1 \int_0^{\sqrt{1-y^2}} \int_{\sqrt{x^2+y^2}}^{\sqrt{16-x^2-y^2}} x^2 + y^2 + z^2 dz dx dy$$

by changing to spherical coordinates.