Math 17: Study Guide for Test 1

The test will cover the material in your notes from:

15.2, 15.3, and the polar coordinates review

Know how to:

Compute \( \int_{g_1(x)}^{g_2(x)} f(x, y) \, dy \, dx \) and \( \int_{h_1(y)}^{h_2(y)} f(x, y) \, dx \, dy \)

Compute double integrals using iterated integrals (Types I and II)

Reverse the order of integration in an iterated integral

Apply double integrals to compute volume

Convert from rectangular to polar coordinates, and visa versa

Sketch circles and lines from equations in polar coordinates

Compute double integrals in polar coordinates (remember the extra r)

Practice Problems:

Page 1020# 21
Page 1027# 10, 15, 17, 34, 50
Page 1034# 11, 14, 20, 26
Page 1089# 13, 20

Redo the problems on polar coordinates that were distributed in class.

Answers To Even Problems:

Page 1027: 10. \( \frac{7}{3}(e - 1) \); 34. \( \frac{8}{15} \); 50. \( \frac{9}{2} \ln 3 - 2 \)
Page 1034: 14. \( \frac{32}{9} \); 20. \( \frac{9\pi}{2} \); 26. \( \frac{\pi}{4} \sin 1 \)
Page 1089: 20. 4

Proofs to Know:

Know how to show \( \Delta A_k \approx r_k^* \Delta r \Delta \theta \) in the derivation of the double integral in polar coordinates

Study your class notes and homework. Know the list of integrals distributed on the first day of class. Good luck on Wednesday!