Math 115 Fall 2003—HW #1 Due: Fri. Oct. 31

Reading for HW # 1: Hughes-Hallett et al §7.7

Problems from Hughes-Hallett §7.7, # 5, 11, 12, 19, 22, 26, 27, 33

Here's what those problems ask you to do (especially for students without textbooks):

Calculate the following integrals, or show that they diverge:

5. $\int_1^\infty \frac{1}{5x+2} dx$

11. $\int_{-\infty}^0 \frac{e^x}{e^x+1} dx$

12. $\int_{-\infty}^\infty \frac{dz}{z^2+25} dz$

19. $\int_0^4 \frac{1}{u^2-16} du$

22. $\int_0^1 \frac{\ln x}{x} dx$

26. $\int_3^\infty \frac{dx}{x(\ln x)^2} dx$

27. $\int_0^2 \frac{1}{\sqrt{4-x^2}} dx$

and

33. Find the area under the curve $y = xe^{-x}$ for $x \geq 0$.

(For # 12, 19, 27, you may use an integral table or Mathematica to do the indefinite integral, and then from there you should plug in the limits and do the "$L \to \infty$" analysis yourselves).