**MATH 162 Practice QUIZ III**

1. Compute the value of each of the following convergent improper integrals:















1. For each of the following improper integrals, determine convergence or divergence. *Justify your answers!*







3***.*** For each of the following improper integrals, determine convergence or divergence. *Justify each answer! (That is, if you use the comparison test, exhibit the function that you choose to use for comparison and show why the appropriate inequality holds.)*

(a) 

(b) 



4. For which value(s) of the constant *C* will the following improper integral converge?



5. For each improper integral given below, determine convergence or divergence. (You may either perform the integration directly or else use the Comparison Test.) *Justify your answers!*

(a) 

(b) 

(c) 

(d) 

(e) 

(f) 

6. For each improper integral given below, determine convergence or divergence. (You will need to use the Comparison Test here.) *Justify your answers!*

(a) 

(b) 

(c) 

(d) 

7. Find the volume of the solid of revolution obtained by rotating the curve y = 1/(1 + x2)1/2 from x = 0 to x = ∞ about the x-axis or explain why no such number exists.

8. For each of the following improper integrals, determine convergence or divergence. Use an appropriate version of the Comparison Test.

(a) 

(b) 

(c) 

(d) 

*As far at the laws of mathematics refer to reality, they are not certain; and as far as they are certain, they do not refer to reality.*

- Albert Einstein, **Sidelights on Relativity**