

Math 1552
Spring 2019
Quiz 5 4:30
February 18, 2019
Time Limit: 15 Minutes

Name (Print): _____

Canvas email: _____

Teaching Assistant/Section: _____

GT ID:

--	--	--	--	--	--	--	--	--

By signing here, you agree to abide by the **Georgia Tech Honor Code**: *I commit to uphold the ideals of honor and integrity by refusing to betray the trust bestowed upon me as a member of the Georgia Tech Community.*

Sign Your Name: _____

This quiz contains 2 pages (including this cover page) and 2 problems. Check to see if any pages are missing. Enter all requested information on the top of this page.

You may *not* use your books, notes, or any calculator on this quiz.

You are required to show your work on each problem on this quiz. The following rules apply:

- **If you use a “fundamental theorem” you must indicate this** and explain why the theorem may be applied.
- **Organize your work**, in a reasonably neat and coherent way, in the space provided. Work scattered all over the page without a clear ordering will receive very little credit.
- **Mysterious or unsupported answers will not receive full credit.** A correct answer, unsupported by calculations, explanation, or algebraic work will receive no credit; an incorrect answer supported by substantially correct calculations and explanations might still receive partial credit.
- Please circle or box in your final answer.

Problem	Points	Score
1	12	
2	8	
Total:	20	

1. (12 points) Evaluate the following integral:

$$\int \frac{3x+8}{x^2+4x+4} dx$$

$$\frac{3x+8}{(x+2)^2} = \frac{A}{x+2} + \frac{B}{(x+2)^2} \quad + 3$$

$$3x+8 = Ax+2A+B$$

$$\boxed{A=3 \quad B=2} \quad + 2$$

$$\int \underbrace{\frac{3}{x+2} + \frac{2}{(x+2)^2}}_{+2} dx = \underbrace{3 \ln|x+2|}_{+2} - \underbrace{\frac{2}{x+2}}_{+2} + \underbrace{C}_{+1}$$

2. (8 points) Evaluate the limit. Be sure to show your work.

$$\lim_{x \rightarrow 1^+} x^x = 1' = 1 \quad + 8$$

*Typo Intended problem:

$$\lim_{x \rightarrow 0^+} x^x \quad y = x^x \quad \ln(y) = x \ln(x)$$

$$\lim_{x \rightarrow 0^+} \ln(y) = \lim_{x \rightarrow 0^+} x \ln(x) = \lim_{x \rightarrow 0^+} \frac{\ln x}{\left(\frac{1}{x}\right)} \quad \frac{-\infty}{\infty}$$

$$\text{L'Hopitals: } \lim_{x \rightarrow 0^+} \frac{\left(\frac{1}{x}\right)}{\frac{-1}{x^2}} = \lim_{x \rightarrow 0^+} -x = 0$$

$$\text{Then} \quad \lim_{x \rightarrow 0^+} x^x = e^{\lim(\ln y)} = e^0 = 1$$