

Instructor: Sal Barone

Name: _____

GT username: _____

1. No books or notes are allowed.
2. No electronic devices are allowed.
3. Show all work and fully justify your answer to receive full credit.
4. Please BOX your answers.
5. The exam consists of 105 points but your score will be out of 100, there is a 5 pt. bonus question at the end.
6. Good luck!

Page	Max. Possible	Points
1	32	
2	32	
3	16	
4	25	
Total	105	

1. Integrate using any method from class.

(16 pts. each)

(a) $\int 5x \sec^2(3x) dx$

(b) $\int \frac{x^2}{(x^2 + 9)^{3/2}} dx$

2. Integrate using any method from class.

(16 pts. each)

(a) $\int \frac{3x + 8}{x^3 + x} dx$

(b) $\int \sin^4(x) \cos^3(x) dx$

3. Either evaluate the integral or show that it diverges.

(16 pts.)

$$\int_1^{\infty} \frac{1 - \ln(x^2)}{x^2} dx$$

4. Evaluate the limit.

(10 pts.)

$$\lim_{x \rightarrow 0} \frac{x \tan^{-1}(x)}{x^2 - \cos x}$$

5. For what values of p does the integral $\int_6^{\infty} \frac{1}{x(\ln x)^p} dx$ converge?

(10 pts.)

Bonus: (5 pts.) Evaluate $\int \sec^3(x) dx$.