
MAT 146

Test #3 Part 1

Name _____

50 points (Part I: 25 points)

___ *Do Not Use a Calculator!*

Impact on Course Grade: approximately 10%

Score _____

Part I: Do Not Use Any Calculator or Computer Tools!

Evaluate each indefinite integral. Do not use your calculator. (1 pt each)

1) $\int 7x^6 + 3e^x dx$ _____

2) $\int 2e^{-x} dx$ _____

3) $\int \frac{1}{x} dx$ _____

4) $\int \frac{4}{x^5} dx$ _____

5) $\int \pi^x e^\pi dx$ _____

6) $\int 5^4 dx$ _____

7) $\int \frac{1}{x+3} dx$ _____

8) $\int \sin\left(\frac{x}{2}\right) dx$ _____

9) $\int -2 \cot(x) \csc(x) dx$ _____

10) $\int \sec^2(x) dx$ _____

Name _____

Part I Continued: Do Not Use Any Calculator or Computer Tools!

#11 and #12: Here are three integrals. The first and third are indefinite integrals and the second is a definite integral. **Choose two** and evaluate. In the space provided, **show all steps** leading to each solution. **Simplify** where appropriate. Clearly indicate which integrals you have chosen! (5 pts each)

A) $\int \frac{2x^3}{\sqrt{x^2+9}} dx$

B) $\int_{\frac{\pi}{6}}^{\frac{\pi}{2}} \cos^3(x) dx$

C) $\int 5xe^{2x} dx$

11. Solution for: A B C (circle one)

12. Solution for: A B C (circle one)

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|---|------|-------|
| 13. The Harmonic Series diverges. | TRUE | FALSE |
| 14. Any p -series with $p < 1$ diverges. | TRUE | FALSE |
| 15. $S = \sum_{k=1}^{\infty} h_k$ always diverges when $\lim_{k \rightarrow \infty} h_k \neq 0$. | TRUE | FALSE |
| 16. Sequence $B, \{b_n\} = \left\{\frac{1}{n}\right\}$, diverges. | TRUE | FALSE |
| 17. If $\lim_{k \rightarrow \infty} d_k = 0$, then $T = \sum_{j=1}^{\infty} d_j$ may converge. | TRUE | FALSE |