Table of Integrals for Exam 2 MTH 252

1. $\displaystyle\int x^n \, dx = \frac{x^{n+1}}{n+1} + C$

2. $\displaystyle\int \frac{1}{x} \, dx = \ln|x| + C$

3. $\displaystyle\int e^x \, dx = e^x + C$

4. $\displaystyle\int a^x \, dx = \frac{1}{\ln a} a^x + C$

5. $\displaystyle\int \sin x \, dx = -\cos x + C$

6. $\displaystyle\int \cos x \, dx = \sin x + C$

7. $\displaystyle\int \sec^2 x \, dx = \tan x + C$

8. $\displaystyle\int \csc^2 x \, dx = -\cot x + C$

9. $\displaystyle\int \sec x \tan x \, dx = \sec x + C$

10. $\displaystyle\int \csc x \cot x \, dx = -\csc x + C$

11. $\displaystyle\int \tan x \, dx = \ln|\sec x| + C$

12. $\displaystyle\int \cot x \, dx = \ln|\sin x| + C$

13. $\displaystyle\int \sec x \, dx = \ln|\sec x + \tan x| + C$

14. $\displaystyle\int \csc x \, dx = \ln|\csc x - \cot x| + C$

15. $\displaystyle\int \frac{1}{\sqrt{a^2 - x^2}} \, dx = \sin^{-1}\left(\frac{x}{a}\right) + C$

16. $\displaystyle\int \frac{1}{a^2 + x^2} \, dx = \frac{1}{a}\tan^{-1}\left(\frac{x}{a}\right) + C$

17. $\displaystyle\int \frac{1}{x\sqrt{x^2 - a^2}} \, dx = \frac{1}{a}\sec^{-1}\left(\frac{x}{a}\right) + C$

18. $\displaystyle\int \sin^2 x \, dx = \frac{1}{2}x - \frac{1}{4}\sin(2x) + C$

19. $\displaystyle\int \cos^2 x \, dx = \frac{1}{2}x + \frac{1}{4}\sin(2x) + C$

20. $\displaystyle\int \tan^2 x \, dx = \tan x - x + C$

21. $\displaystyle\int \cot^2 \, dx = -\cot x - x + C$

22. $\displaystyle\int \ln x \, dx = x \ln x - x + C$

23. $\displaystyle\int \sin^{-1} x \, dx = x \sin^{-1} x + \sqrt{1 - x^2} + C$

24. $\displaystyle\int \cos^{-1} x \, dx = x \cos^{-1} x - \sqrt{1 - x^2} + C$

25. $\displaystyle\int \tan^{-1} x \, dx = x \tan^{-1} x - \frac{1}{2}\ln(1 + x^2) + C$