

Math 122 - #3
Trig- Integrals

Compute the following integrals:

1. $\int \sin^5 x \cos^2 x \, dx$

2. $\int \cos^5 x \sin^2 x \, dx$

3. $\int \sin^3 x \cos^4 x \, dx$

4. $\int \frac{\cos^3 x}{\sqrt{\sin x}} \, dx$

5. $\int \cos^4 x \, dx$

6. $\int \sin^2 2x \cos^2 2x \, dx$

7. $\int \cos^3 3x \, dx$

8. $\int \tan^3 3x \sec^4 3x \, dx$

9. $\int \frac{\sec x}{\tan^2 x} \, dx$

10. $\int \frac{\tan^3 x}{\sqrt{\sec x}} \, dx$

11. $\int \tan 2x \, dx$

12. $\int \tan^2 3x \, dx$

13. $\int \tan^4 x \, dx$

Answers

1. $-\left(\frac{\cos^3 x}{3} - \frac{2\cos^5 x}{5} + \frac{\cos^7 x}{7}\right) + C$

2. $\frac{\sin^3 x}{3} - \frac{2\sin^5 x}{5} + \frac{\sin^7 x}{7} + C$

3. $\frac{\cos^7 x}{7} - \frac{\cos^5 x}{5} + C$

4. $2\sqrt{\sin x} - \frac{2\sqrt{\sin^5 x}}{5} + C$

5. $\frac{3x}{8} + \frac{\sin 2x}{4} + \frac{\sin 4x}{32} + C$

6. $\frac{1}{8}\left(x - \frac{\sin 8x}{8}\right) + C$

7. $\frac{\sin 3x}{3} - \frac{\sin^3 3x}{9} + C$

8. $\frac{1}{3}\left[\frac{\tan^6 3x}{6} + \frac{\tan^4 3x}{4}\right] + C$

9. $-\csc x + C$

10. $\frac{2}{3}(\sec x)^{3/2} + 2(\sec x)^{-1/2} + C$

11. $\frac{1}{2}\ln|\sec 2x| + C$

12. $\frac{\tan 3x}{3} - x + C$

13. $\frac{\tan^3 x}{3} - \tan x + x + C$