

แบบฝึกหัด เรื่อง การหาปริพันธ์ของฟังก์ชันตรีโกณมิติ

จงหาปริพันธ์ต่อไปนี้

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

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

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

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

5. $\int \sin^2 x \cos^4 x \, dx$

6. $\int \sin^3 x \cos^5 x \, dx$

7. $\int \sin^9 x \cos^3 x \, dx$

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

9. $\int \sin x \sin 5x \, dx$

10. $\int \cos x \cos\left(\frac{x}{2}\right) dx$

11. $\int \sec^2 3x dx$

12. $\int \tan^4 x \sec^2 x \, dx$

13. $\int \tan^3 x \sec^5 x \, dx$

14. $\int \tan^3 x \sec^6 x dx$

15. $\int \sec^3 x \, dx$

16. $\int \tan^4 x \sec x \, dt$

17. $\int \csc^2 x \, dx$

18. $\int \cot^6 x \csc^2 x \, dx$

19. $\int \cot^3 x \csc^3 x \, dx$

20. $\int \cot^2 x \csc x \, dx$

คำตอบแบบฝึกหัด

1. $-\frac{1}{3}\cos^3 x + c$
2. $\frac{1}{5}\sin^5 x + c$
3. $\frac{3x}{8} - \frac{1}{4}\sin 2x + \frac{1}{32}\sin 4x + c$
4. $\frac{3}{8}x + \frac{1}{4}\sin 2x + \frac{1}{32}\sin 4x + c$
5. $\frac{x}{16} + \frac{1}{64}\sin 2x - \frac{1}{64}\sin 4x - \frac{1}{192}\sin 6x + c$
6. $\frac{1}{8}\cos^8 x - \frac{1}{6}\cos^6 x + c$
7. $\frac{1}{10}\sin^{10} x - \frac{1}{12}\sin^{12} x + c$
8. $\frac{1}{2}\cos x - \frac{1}{14}\cos 7x + c$
9. $\frac{1}{8}\sin 4x - \frac{1}{12}\sin 6x + c$
10. $\sin\left(\frac{x}{2}\right) + \frac{1}{3}\sin\left(\frac{3x}{2}\right) + c$
11. $\frac{1}{3}\tan 3x + c$
12. $\frac{1}{5}\tan^5 x + c$
13. $-\frac{1}{5}\sec^5 x + \frac{1}{7}\sec^7 x + c$
14. $-\frac{1}{6}\sec^6 x + \frac{1}{8}\sec^8 x + c$
15. $\frac{1}{2}\sec x \tan x + \frac{1}{2}\ln|\sec x + \tan x| + c$
16. $\frac{1}{4}\tan^3 x \sec x - \frac{3}{8}\sec x \tan x + \frac{3}{8}\ln|\sec x + \tan x| + c$
17. $-\cot x + c$
18. $-\frac{1}{7}\cot^7 x + c$
19. $-\frac{1}{5}\csc^5 x + \frac{1}{3}\csc^3 x + c$
20. $-\frac{1}{2}\csc x \cot x - \frac{1}{2}\ln|\csc x - \cot x| + c$