Practice Problems: Trig Integrals

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November 9, 2014

This is a list of practice problems for Math 3B. Feel free to work with a group on any problem. These problems are intended to enhance your knowledge and give you something to bring a boring party back to life.

1. $\int \sec x dx$
2. $\int \sec^3 x dx$
3. $\int \cos^4 x dx$
4. $\int t \sin^2 t dt$
5. $\int \frac{\sin^3 \sqrt{x}}{\sqrt{x}} dx$
6. $\int_0^{\pi} \sin^2 t \cos^4 t dt$
7. $\int_0^{\pi/2} (2 - \sin\theta)^2 d\theta$
8. $\int \cos^2 x \sin 2x dx$
9. $\int \tan x \sec^3 x dx$
10. $\int x \sec x \tan x dx$
11. $\int \csc x dx$
12. $\int \cot^3 x dx$
13. $\int \sin 8x \cos 5x dx$
14. $\int \cos \pi x \cos 4\pi x dx$
15. $\int_0^{\pi/6} \sqrt{1 + \cos 2x} dx$
16. $\int_0^{\pi/4} \sqrt{1 - \cos 4\theta} d\theta$
17. $\int \frac{1 - \tan^2 x}{\sec^2 x} dx$
18. $\int \frac{dx}{\cos x - 1}$
19. $\int x \tan^2 x dx$
20. $\int x \sin^2 (x^2) dx$
21. Find the area of the region bounded by the given curves: $y = \sin^3 x$, $y = \cos^3 x$, $\pi/4 \leq x \leq 5\pi/4$
22. Find the volume obtained by rotating the region bounded by the given curves about the specified axis: $y = \sec x, y = \cos x$, $0 \leq x \leq \pi/3$ about $y = -1$.