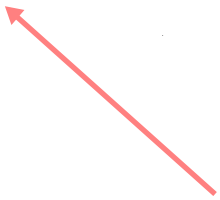
[08-12-04-TF-13]

PROBLEMS

Evaluate the following integrals:

1. $\int \sin^2 x \cos^2 x \, dx$
2. $\int \sin^4 y \cos^2 y \, dy$
3. $\int \sin^2 2t \, dt$
4. $\int \cos^2 3\theta \, d\theta$
5. $\int \sin^4 ax \, dx$
6. $\int \frac{\sin^4 x \, dx}{\cos^2 x}$
7. $\int \frac{dx}{\cos^2 x}$
8. $\int \frac{dx}{\sin^4 x}$
9. $\int \frac{\cos 2t \, dt}{\sin^4 2t}$
10. $\int \sin^6 x \, dx$
11. $\int_0^{2\pi} \sqrt{\frac{1 - \cos t}{2}} \, dt$
12. $\int_0^{\pi} \sqrt{1 - \cos 2x} \, dx$
13. $\int_0^{\pi/10} \sqrt{1 + \cos 5\theta} \, d\theta$
14. $\int_0^{2\pi} \sqrt{1 + \cos (y/4)} \, dy$
15. The graph of $x = t - \sin t$, $y = 1 - \cos t$, $0 \le t \le 2\pi$, is an arch standing on the x-axis. Find the surface area generated by rotating the arch about the axis.
16. Find the volume generated by revolving one arch of the curve $y = \sin x$ about the x-axis.



These are all integrals, but the integral sign did not cc

Article 7–3, p. 345

1. $(x/8) - [(\sin 4x)/32] + C$ **2.** $(y/16) - [(\sin 4y)/64] - [(\sin^3 2y)/48] + C$ **3.** $(t/2) - \frac{1}{8}\sin 4t + C$ **4.** $(\theta/2) + \frac{1}{12}\sin 6\theta + C$
5. $\frac{3}{8}x - (1/4a)\sin 2ax + (1/32a)\sin 4ax + C$ **6.** $\tan x - \frac{3}{2}x + [(\sin 2x)/4] + C$ **7.** $\tan x + C$ **8.** $-\frac{1}{3}\cot^3 x - \cot x + C$

9. $-\frac{1}{6}\csc^3 2t + C$ **10.** $\frac{5}{16}x - \frac{1}{4}\sin 2x + \frac{3}{64}\sin 4x + \frac{1}{48}\sin^3 2x + C$ **11.** 4 **12.** $2\sqrt{2}$ **13.** 2/5 **14.** 8 **15.** $64\pi/3$ **16.** $\pi^2/2$