

## 7.1 Homework

3.  $\int x \cos 5x \, dx$

5.  $\int t e^{-3t} \, dt$

7.  $\int (x^2 + 2x) \cos x \, dx$

9.  $\int \cos^{-1} x \, dx$

11.  $\int t^4 \ln t \, dt$

13.  $\int t \csc^2 t \, dt$

15.  $\int (\ln x)^2 \, dx$

17.  $\int e^{2\theta} \sin 3\theta \, d\theta$

19.  $\int z^3 e^z \, dz$

21.  $\int \frac{x e^{2x}}{(1+2x)^2} \, dx$

23.  $\int_0^{1/2} x \cos \pi x \, dx$

25.  $\int_0^2 y \sinh y \, dy$

27.  $\int_1^5 \frac{\ln R}{R^2} \, dR$

29.  $\int_0^\pi x \sin x \cos x \, dx$

31.  $\int_1^9 \frac{M}{e^M} \, dM$

33.  $\int_0^{\pi/4} \sin x \ln(\cos x) \, dx$

35.  $\int_1^2 x^4 (\ln x)^2 \, dx$

37.  $\int e^{\sqrt{x}} \, dx$

39.  $\int_{\pi/2}^{\pi} \theta^3 \cos(\theta^2) \, d\theta$

41.  $\int x \ln(1+x) \, dx$

(51)  $\int (\ln x)^n \, dx = x(\ln x)^n - n \int (\ln x)^{n-1} \, dx$

(53)  $\int \tan^n x \, dx = \frac{\tan^{n-1} x}{n-1} - \int \tan^{n-2} x \, dx \quad (n \neq 1)$

(61)  $y = \cos(\pi x/2), y=0, 0 \leq x \leq 1$ ; about the y-axis

(63)  $y = e^x, y=0, x=-1, x=0$ ; about  $x=1$

(69) A particle that moves along a straight line has velocity  $v(t) = t^2 e^{-t}$  meters per second after  $t$  seconds. How far will it travel during the first  $t$  seconds?

## 7.2 Homework

$$(1) \int \sin^2 x \cos^3 x \, dx$$

$$(3) \int_0^{\pi/2} \sin^2 \theta \cos^5 \theta \, d\theta$$

$$(5) \int \sin^5(2t) \cos^2(2t) \, dt$$

$$(7) \int_0^{\pi/2} \cos^2 \theta \, d\theta$$

$$(9) \int_0^{\pi} \cos^4(2t) \, dt$$

$$(11) \int_0^{\pi/2} \sin^2 x \cos^2 x \, dx$$

$$(13) \int \sqrt{\cos \theta} \sin^3 \theta \, d\theta$$

$$(15) \int \cot x \cos^2 x \, dx$$

$$(17) \int \sin^2 x \sin 2x \, dx$$

$$(19) \int t \sin^2 t \, dt$$

$$(21) \int \tan x \sec^3 x \, dx$$

$$(23) \int \tan^2 x \, dx$$

$$(25) \int \tan^4 x \sec^6 x \, dx$$

$$(27) \int \tan^3 x \sec x \, dx$$

$$(29) \int \tan^3 x \sec^6 x \, dx$$

$$(31) \int \tan^5 x \, dx$$

$$(33) \int x \sec x \tan x \, dx$$

$$(35) \int_{\pi/6}^{\pi/2} \cot^2 x \, dx$$

$$(37) \int_{\pi/4}^{\pi/2} \cot^5 \phi \csc^3 \phi \, d\phi$$

$$(39) \int \csc x \, dx$$

$$(41) \int \sin 8x \cos 5x \, dx$$

$$(43) \int_0^{\pi/2} \cos 5t \cos 10t \, dt$$

$$(45) \int_0^{\pi/6} \sqrt{1 + \cos 2x} \, dx$$

$$(47) \int \frac{1 - \tan^2 x}{\sec^2 x} \, dx$$

$$(49) \int x \tan^2 x \, dx$$

$$(61) y = \sin x, y = 0, \frac{\pi}{2} \leq x \leq \pi; \text{ about the } x\text{-axis}$$

$$(63) y = \sin x, y = \cos x, 0 \leq x \leq \frac{\pi}{4}; \text{ about } y = 1$$

$$(67) \int_{-\pi}^{\pi} \sin mx \cos nx \, dx = 0$$

$$(69) \int_{-\pi}^{\pi} \cos mx \cos nx \, dx = \begin{cases} 0 & \text{if } m \neq n \\ \pi & \text{if } m = n \end{cases}$$