

$$8. \int (5 \cos x - 2 \sec^2 x) dx$$

$$105. \int \frac{\arctan(x/2)}{4 + x^2} dx$$

$$17. \int \frac{1}{7x - 2} dx$$

$$56. \int \left(x + \frac{1}{x}\right)^2 dx$$

$$64. \int \frac{\cos x}{\sqrt{\sin x}} dx$$

$$51. \int \frac{e^{4x} - e^{2x} + 1}{e^x} dx$$

$$3. \int (2x^2 + x - 1) dx$$

$$71. \int (x + 1)5^{(x+1)^2} dx$$

$$18. \int \frac{x}{x^2 - 1} dx$$

$$68. \int \cot^4 \alpha \csc^2 \alpha d\alpha$$

$$62. \int x \sin 3x^2 dx$$

$$72. \int \frac{2^{-1/t}}{t^2} dt$$

$$106. \int \frac{\arcsin x}{\sqrt{1 - x^2}} dx$$

$$59. \int x(1 - 3x^2)^4 dx$$

$$5. \int \frac{x^3 + 1}{x^2} dx$$

$$19. \int \frac{\sin x}{1 + \cos x} dx$$

$$60. \int \frac{x + 3}{(x^2 + 6x - 5)^2} dx$$

$$104. \int \frac{4 - x}{\sqrt{4 - x^2}} dx$$

$$53. \int xe^{1-x^2} dx$$

$$50. \int \frac{e^{1/x}}{x^2} dx$$

$$66. \int \sec 2x \tan 2x dx$$

$$57. \int \frac{x^2}{\sqrt{x^3 + 3}} dx$$

$$6. \int \frac{x^3 - 2x^2 + 1}{x^2} dx$$

$$65. \int \tan^n x \sec^2 x dx, \quad n \neq -1$$

$$52. \int \frac{e^{2x} - e^{-2x}}{e^{2x} + e^{-2x}} dx$$

$$67. \int (1 + \sec \pi x)^2 \sec \pi x \tan \pi x dx$$

$$54. \int x^2 e^{x^3+1} dx$$

$$99. \int \frac{1}{e^{2x} + e^{-2x}} dx$$

$$103. \int \frac{x}{16 + x^2} dx$$

$$63. \int \frac{\sin \theta}{\sqrt{1 - \cos \theta}} d\theta$$

$$49. \int xe^{-3x^2} dx$$

$$55. \int \frac{e^x}{e^x - 1} dx$$

$$100. \int \frac{1}{3 + 25x^2} dx$$

$$102. \int \frac{1}{16 + x^2} dx$$

$$61. \int \sin^3 x \cos x dx$$

$$55. \int (x^2 + 1)^3 dx$$

$$58. \int x^2 \sqrt{x^3 + 3} dx$$

$$101. \int \frac{x}{\sqrt{1 - x^4}} dx$$

$$7. \int (4x - 3 \sin x) dx$$

$$56. \int \frac{e^{2x}}{e^{2x} + 1} dx$$

$$4. \int \frac{2}{\sqrt[3]{3x}} dx$$

$$20. \int \frac{\ln \sqrt{x}}{x} dx$$

$$24. \int_0^{\pi/4} \tan\left(\frac{\pi}{4} - x\right) dx$$

$$33. \int_0^4 (2 + x) dx$$

$$39. \int_0^{3\pi/4} \sin \theta d\theta$$

$$40. \int_{-\pi/4}^{\pi/4} \sec^2 t dt$$

$$23. \int_0^{\pi/3} \sec \theta d\theta$$

$$38. \int_1^2 \left(\frac{1}{x^2} - \frac{1}{x^3}\right) dx$$

$$69. \int_{-1}^2 x(x^2 - 4) dx$$

$$22. \int_1^e \frac{\ln x}{x} dx$$

$$75. \int_0^{\pi} \cos \frac{x}{2} dx$$

$$34. \int_{-1}^1 (t^2 + 2) dt$$

$$70. \int_0^1 x^2(x^3 + 1)^3 dx$$

$$71. \int_0^3 \frac{1}{\sqrt{1+x}} dx$$

$$35. \int_{-1}^1 (4t^3 - 2t) dt$$

$$21. \int_1^4 \frac{x+1}{x} dx$$

$$76. \int_{-\pi/4}^{\pi/4} \sin 2x dx$$

$$72. \int_3^6 \frac{x}{3\sqrt{x^2-8}} dx$$

$$36. \int_{-2}^2 (x^4 + 2x^2 - 5) dx$$

$$73. 2\pi \int_0^1 (y+1)\sqrt{1-y} dy$$

$$74. 2\pi \int_{-1}^0 x^2\sqrt{x+1} dx$$

$$32. \int_1^3 \frac{12}{x^3} dx$$

$$31. \int_1^8 (\sqrt[3]{x} + 1) dx$$

(a) $\frac{320}{9}$ (b) $-\frac{16}{3}$
 (c) $-\frac{5}{9}$ (d) $\frac{16}{3}$

(a) $\frac{81}{4}$ (b) $\frac{331}{12}$
 (c) $\frac{73}{4}$ (d) $\frac{355}{12}$

$$37. \int_4^9 x\sqrt{x} dx$$

30. If $\int_0^3 f(x) dx = 4$ and $\int_3^6 f(x) dx = -1$, find

(a) $\int_0^6 f(x) dx.$

(b) $\int_6^3 f(x) dx.$

(c) $\int_4^6 f(x) dx.$

(d) $\int_3^6 -10f(x) dx.$

29. If $\int_2^6 f(x) dx = 10$ and $\int_2^6 g(x) dx = 3$, find

(a) $\int_2^6 [f(x) + g(x)] dx.$

(b) $\int_2^6 [f(x) - g(x)] dx.$

(c) $\int_2^6 [2f(x) - 3g(x)] dx.$

(d) $\int_2^6 5f(x) dx.$

In Exercises 49 and 50, find the average value of the function over the interval. Find the values of x at which the function assumes its average value, and graph the function.

Function	Interval
49. $f(x) = \frac{1}{\sqrt{x}}$	[4, 9]
50. $f(x) = x^3$	[0, 2]

In Exercises 51-54, use the Second Fundamental Theorem of Calculus to find $F'(x)$.

51. $F(x) = \int_0^x t^2\sqrt{1+t^3} dt$

52. $F(x) = \int_1^x \frac{1}{t^2} dt$

53. $F(x) = \int_{-3}^x (t^2 + 3t + 2) dt$

54. $F(x) = \int_0^x \csc^2 t dt$