# Integration Problems to Work in Preparation for the Technique Test

1. $\int e^x \sqrt{1-e^{2x}}dx$
2. $\int x\sec^2 x dx$
3. $\int \frac{4x+4}{2x+1}dx$
4. $\int 7xe^{x^2}dx$
5. $\int \frac{dx}{x^2+6x+9}$
6. $\int_{-10}^{10} \sin(x^3)dx$
7. $\int_1^9 \sqrt{4+3x}dx$
8. $\int e^x \sin x dx$
9. $\int x\ln x dx$
10. $\int \sin^2(7x)dx$
11. $\int \frac{4x^3+3x^2+2x+1}{x^4+x^3+x^2+x+1}dx$
12. $\int \frac{6x+3}{(x-1)(x-2)(x-3)}dx$
13. $\int x\cos(x^2)\,dx$
14. $\int x^2\cos x\,dx$
15. $\int \cos(x^2)\,dx$ (Use series.)
16. $\int \cos^2 x\,dx$
17. $\int x^3\cos x^2\,dx$
18. $\int \cos^3 x\,dx$
19. $\int_1^e \ln x\,dx$
20. $\int (\ln x)^2\,dx$
21. $\int \frac{(\ln x)^2}{x}\,dx$
22. $\int_e^{e^3} \frac{1}{x\ln x}\,dx$
23. $\int x\ln(x^2+1)\,dx$
24. $\int \frac{x^2-1}{x^2+1}\,dx$
25. $\int \frac{x^2+1}{x^2-1}\,dx$
26. $\int \frac{x}{x^4+1}\,dx$
27. $\int \frac{x}{\sqrt{x^2+1}}\,dx$
28. $\int \frac{x}{\sqrt{9x^2-4}}\,dx$
29. $\int \frac{e^x}{e^{2x}-4}\,dx$
30. $\int \frac{e^{2x}}{e^{2x}-4}\,dx$

31. $\int_0^{\ln 3} \frac{e^x}{\sqrt{e^x+4}}\,dx$
32. $\int \frac{x+5}{x^2-2x-3}\,dx$
33. $\int \frac{x^2+3}{x^2+1}\,dx$
34. $\int \sqrt{4-x^2}\,dx$
35. $\int \arctan(5x)\,dx$
36. $\int x^2 e^{x^3}\,dx$
37. $5\int \sin(3x)\cos(3x)dx$
38. $3\int \tan(2x)dx$
39. $\int e^{\tan x}\sec^2 x dx$
40. $\int \cos x \sin(2\sin x)dx$
41. $-\int \frac{ln(1+x)}{(1+x)^2}dx$
42. $\int \frac{x^3}{x^2+2x+1}dx$
43. $\int \frac{2}{x^2+2x+1}dx$
44. $\int \frac{1}{x(x+2)}dx$
45. $\int e^x \sin x dx$
46. $\int 3x\cos x dx$
47. $\int x\sqrt{x^2+2x}+\sqrt{x^2+2x}\,dx$
48. $\int \cos(2x)e^{3x}dx$
49. $\int_1^e \frac{\sin(\ln(x))}{x}dx$
50. $\int \sin(\ln(x))dx$
51. $\int_0^4 e^{\sqrt{x}}dx$
52. $\int \frac{3}{x^2(x^2+9)}dx$
53. $\int \frac{x^3}{x^2+1}dx$
54. $\int \frac{dx}{x^3+x}$
55. $\int \frac{\sin(x)dx}{\cos^2(x)-5\cos(x)+4}$
56. $\int \frac{dx}{e^x-1}$
57. $\int \frac{du}{(1+2u)(u^2+u)^{1/2}}$
58. $\int_0^1 \frac{dx}{\sqrt{4-x^2}}$
59. $\int \frac{e^{\sqrt{x}}}{\sqrt{x}}dx$
60. $\int sin^3(x)dx$
61. $\int \frac{x+1}{x^2+1}dx$
62. $\int 2xe^(x+1)^2+2e^(x+1)^2$

63. $\int cos^2(x) - sin^2(x)dx$

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

65. $\int xsin((x+1)(x-1))dx$

66. $\int \frac{x^5-1}{x-1}dx$

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

68. $\int_{-\pi/2}^{\pi/2} \frac{x^3}{\sqrt{1-x^2}}dx$

69. $\int_1^e x^2 \ln x \, dx$

70. $\int \sin x \, \cos x \, dx$

71. $\int \frac{dx}{x \ln x \, \ln(\ln x)}$

72. $\int \sin x \, e^{2x} \, dx$

73. $\int \sin^3(2x) \, dx$

74. $\int \ln \sqrt{x} \, dx$

75. $\int \frac{x+1}{x^2-4} \, dx$

76. $\int \frac{1}{(x^2+1)^{3/2}} \, dx$

77. $\int_1^2 \frac{1}{x(1+x^3)} \, dx$

78. $\int \frac{\cos(x)}{1+\sin(x)} \, dx$

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

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

81. $\int_{1/2}^1 \frac{1}{x^2\sqrt{1-x^2}} \, dx$

82. $\int_1^\infty \frac{\ln(x)}{x^2} \, dx$

83. $\int \frac{x}{(x^2-a^2)^{3/2}} \, dx$

84. $\int_{\frac{\pi}{4}}^{\frac{\pi}{3}} \frac{1}{\sin x}dx$

85. $\int x(\ln x)^2 dx$

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

87. $\int_1^3 \frac{1}{x\sqrt{x^2+3}}dx$

88. $\int \tan^2 x dx$

89. $\int_0^{\frac{1}{2}\ln 3} \frac{1}{e^x+e^{-x}}dx$

90. $\int_0^1 \frac{1}{\sqrt{1-x^2}}dx$

91. $\int_0^1 x^5 \ln x dx$

92. $\int_1^2 \frac{e^{-\frac{1}{x}}}{x^2}dx$

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

94. $\int e^{lnx}dx$

95. $\int \frac{(x-1)dx}{(x^2+1)(x+1)}$

96. $\int_0^1 \sqrt{1-x^2}x^2dx$

97. $\int \cos(x)\ln(\sin(x))dx$

98. $\int \frac{\sqrt{x}dx}{x+1}$

99. $\int \sqrt{\ln x}/xdx$

100. $\int x^2e^x dx$

101. $\int (\sin x)^3 dx$

102. $\int \ln(x^2+1)dx$

103. $\int \frac{\ln(\ln x)}{x}dx$