ANÁLISIS MATEMÁTICO II. Integral Indefinida
I. Calcular las siguientes integrales:

1. $\int x^5 dx$. Resp.: $\frac{x^6}{6}$+C.
2. $\int (x+\sqrt{x})dx$. Resp.:$\frac{x^2}{2}+\frac{2x\sqrt{x}}{3}$+C.
3. $\int \left(\frac{3}{\sqrt{x}}-\frac{x\sqrt{x}}{4}\right)dx$. Resp.:$6\sqrt{x}-\frac{1}{10}x^2\sqrt{x}$+C.
4. $\int \frac{x^2}{\sqrt{x}}dx$. Resp.:$\frac{2}{5}x^2\sqrt{x}$+C.
5. $\int \left(\frac{1}{x^2}-\frac{4}{x\sqrt{x}}+2\right)dx$. Resp.:$-\frac{1}{x}-\frac{8}{\sqrt{x}}-2x$+C.
6. $\int \frac{dx}{\sqrt{x}}$. Resp.:$2\sqrt{x}$+C.
7. $\int \left(x^2+\frac{1}{\sqrt[3]{x}}\right)^2 dx$. Resp.: $\frac{x^5}{5}+\frac{3}{4}x^2\sqrt[3]{x^2}+3\sqrt[3]{x}$+C.

Integración por sustitución

8. $\int e^{5x}dx$. Resp.: $\frac{1}{5}e^{5x}$+C.
9. $\int cos5xdx$. Resp.: $\frac{sen5x}{5}$+C.
10. $\int senaxdx$. Resp.: $\frac{-cosax}{a}$+C.
11. $\int \frac{lnx}{x}dx$. Resp.:$\frac{1}{2}ln^2x$+C.
12. $\int \frac{dx}{sen^2 3x}$. Resp.:$\frac{-cotg3x}{3}$+C.
13. $\int \frac{dx}{cos^2 7x}$. Resp.:$\frac{tg7x}{7}$+C.
14. $\int \frac{dx}{3x-7}$. Resp.:$\frac{1}{3}ln|3x-7|$+C.

15. $\int \frac{dx}{1-x}$. Resp.: $-ln|1-x|$+C.

16. $\int \frac{dx}{5-2x}$. Resp.:$\frac{-1}{2}ln|5-2x|$+C.

17. $\int tg2xdx$. Resp.: $\frac{-1}{2}ln|cos2x|$+C.

18. $\int cotg(5x-7)dx$. Resp.:$\frac{1}{5}Ln|sen(5x-7)|$+C.

19. $\int \frac{dy}{cotg3y}$. Resp.:$\frac{-1}{3}ln|cos3y|$+C.

20. $\int cotg\frac{x}{3}dx$. Resp.:$3ln|sen\frac{x}{3}|$+C.

21. $\int tgx.sec^2xdx$. Resp.:$\frac{1}{2}tg^2x$+C.

22. $\int (ctge^x)e^xdx$. Resp.: $ln|sene^x|$+C.

23. $\int \left(tg4S - cotg\frac{S}{4}\right)dS$. Resp.: $\frac{-1}{4}ln|cos4S| - 4ln|sen\frac{S}{4}|$+C.

24. $\int sen^2xcosxdx$. Resp.:$\frac{sen^3x}{3}$+C.

25. $\int cos^3xsenxdx$. Resp.: $\frac{-cos^4x}{4}$+C.

26. $\int \sqrt{x^2+1}xdx$. Resp.:$\frac{1}{3}\sqrt{(x^2+1)^3}$+C.

27. $\int \frac{xdx}{\sqrt{2x^2+3}}$. Resp.: $\frac{1}{2}\sqrt{2x^2+3}$+C.

28. $\int \frac{x^2dx}{\sqrt{x^3+1}}$. Resp.: $\frac{2}{3}\sqrt{x^3+1}$+C.

29. $\int \frac{cosxdx}{sen^2x}$. Resp.:$\frac{-1}{senx}$+C.

30. $\int \frac{senxdx}{cos^3x}$. Resp.:$\frac{1}{2cos^2x}$+C.

31. $\int \frac{tgx}{cos^2x}dx$. Resp.:$\frac{tg^2x}{2}$+C.

32. $\int \frac{cotgxdx}{sen^2x}$. Resp.:$\frac{-cotg^2x}{2}$+C.

33. $\int \frac{dx}{cos^2x\sqrt{tgx-1}}$. Resp.: $2\sqrt{tgx-1}$+C.

34. $\int \frac{ln(x+1)}{x+1}dx$. Resp.:$\frac{ln^2(x+1)}{2}$+C.

35. $\int \frac{cosxdx}{\sqrt{2senx+1}}$. Resp.: $\sqrt{2senx+1}$+C.

36. $\int \frac{sen2xdx}{(1+cos2x)^2}$. Resp.: $\frac{1}{2(1+cos2x)}$+C.

37. $\int \frac{sen2xdx}{\sqrt{1+sen^2x}}$. Resp.: $2\sqrt{1+sen^2x}$+C.

38. $\int \frac{\sqrt{tgx+1}}{cos^2x}dx$. Resp.: $\frac{2}{3}\sqrt{(tgx+1)^3}$+C.

39. $\int \frac{cos2xdx}{(2+3sen2x)^3}$. Resp.: $\frac{-1}{12}\frac{1}{(2+3sen^2x)^2}$+C.

40. $\int \frac{sen3xdx}{\sqrt[3]{cos^4 3x}}$. Resp.: $\frac{1}{\sqrt[3]{cos3x}}$+C.

41. $\int \frac{ln^2xdx}{x}$. Resp.: $\frac{ln^3x}{3}$+C.

42. $\int \frac{arcsenxdx}{\sqrt{1-x^2}}$. Resp.: $\frac{arcsen^2x}{2}$+C.

43. $\int \frac{arctgxdx}{1+x^2}$. Resp.: $\frac{arctg^2x}{2}$+C.

44. $\int \frac{arccos^2x}{\sqrt{1-x^2}}dx$. Resp.: $\frac{-arccos^3x}{3}$+C.

45. $\int \frac{arcotgx}{1+x^2}dx$. Resp.: $\frac{-arccotg^2x}{2}$+C.

46. $\int \frac{xdx}{x^2+1}$. Resp.: $\frac{1}{2}ln(x^2+1)$+C.

47. $\int \frac{x+1}{x^2+2x+3}dx$. Resp.: $\frac{1}{2}ln(x^2+2x+3)$+C.

48. $\int \frac{cosxdx}{2senx+3}$. Resp.: $\frac{1}{2}ln(2senx+3)$+C.

49. $\int \frac{dx}{xlnx}$. Resp.: $ln|lnx|$+C.

50. $\int 2x(x^2+1)^4dx$. Resp.: $\frac{(x^2+1)^5}{5}$+C.

51. $\int tg^4xdx$. Resp.: $\frac{tg^3x}{3} - tgx + x$+C.

52. $\int \frac{dx}{(1+x^2)arctgx}$. Resp.: $ln|artgx|$+C.

53. $\int \frac{dx}{cos^2x(3tgx+1)}$. Resp.: $\frac{1}{3}ln|3tgx+1|$+C.

54. $\int \frac{tg^3x}{cos^2x}dx$. Resp.: $\frac{tg^4x}{4}$+C.

55. $\int \frac{dx}{\sqrt{1-x^2}arcsenx}$. Resp.: $ln|arcsenx|$+C.

56. $\int \frac{cos2x}{2+3sen2x}dx$. Resp.: $\frac{1}{6}ln|2+3sen2x|$+C.

57. $\int cos(lnx)\frac{dx}{x}$. Resp.: $sen(lnx)$+C.

58. $\int cos(a+bx)dx$. Resp.: $\frac{1}{b}sen(a+bx)$+C.

59. $\int e^{2x}dx$. Resp.: $\frac{1}{2}e^{2x}$+C.

60. $\int e^{\frac{x}{3}}dx$. Resp.: $3e^{\frac{x}{3}}$+C.

61. $\int e^{senx}cosxdx$. Resp.: e^{senx}+C.

62. $\int a^{x^2} x dx$. Resp.: $\dfrac{a^{x^2}}{2lna}$+C.

63. $\int e^{\frac{x}{a}} dx$. Resp.: $ae^{\frac{x}{a}}$+C.

64. $\int (e^{2x})^2 dx$. Resp.: $\dfrac{1}{4}e^{4x}$+C.

65. $\int 3^x e^x dx$. Resp.: $\dfrac{3^x e^x}{ln3+1}$+C.

66. $\int e^{-3x} dx$. Resp.: $\dfrac{-1}{3}e^{-3x}$+C.

67. $\int (e^{5x} + a^{5x}) dx$. Resp.: $\dfrac{1}{5}\left(e^{5x} + \dfrac{a^{5x}}{lna} + C\right)$.

68. $\int e^{x^2+4x+3}(x+2) dx$. Resp.: $\dfrac{1}{2}e^{x^2+4x+3}$+C.

69. $\int \dfrac{(a^x - b^x)^2}{a^x b^x} dx$. Resp.: $\dfrac{\left(\dfrac{a}{b}\right)^x - \left(\dfrac{b}{a}\right)^x}{lna - lnb} - 2x$+C.

70. $\int \dfrac{e^x dx}{3+4e^x}$. Resp.: $\dfrac{1}{4}ln(3+4e^x)$+C.

71. $\int \dfrac{e^{2xdx}}{2+e^{2x}}$. Resp.: $\dfrac{1}{2}ln(2+e^{2x})$+C.

72. $\int \dfrac{dx}{1+2x^2}$. Resp.: $\dfrac{1}{\sqrt{2}}arctg(\sqrt{2}\,x)$+C.

73. $\int \dfrac{dx}{\sqrt{1-3x^2}}$. Resp.: $\dfrac{1}{\sqrt{3}}arcsen(\sqrt{3}\,x)$+C.

74. $\int \dfrac{dx}{\sqrt{16-9x^2}}$. Resp.: $\dfrac{1}{3}arcsen\dfrac{3x}{4}$+C.

75. $\int \dfrac{dx}{\sqrt{9-x^2}}$. Resp.: $arcsen\dfrac{x}{3}$+C.

76. $\int \dfrac{dx}{4+x^2}$. Resp.: $\dfrac{1}{2}arctg\dfrac{x}{2}$+C.

77. $\int \frac{dx}{9x^2+4}$. Resp.: $\frac{1}{6}arctg\frac{3x}{2}$+C.

78. $\int \frac{dx}{4-9x^2}$. Resp.: $\frac{1}{12}ln\left|\frac{2+3x}{2-3x}\right|$+C.

79. $\int \frac{dx}{\sqrt{x^2+9}}$. Resp.: $ln|x+\sqrt{x^2+9}|$+C.

80. $\int \frac{dx}{\sqrt{b^2x^2-a^2}}$. Resp.: $\frac{1}{b}ln\left|bx+\sqrt{b^2x^2-a^2}\right|$+C.

81. $\int \frac{dx}{\sqrt{b^2+a^2x^2}}$. Resp.: $\frac{1}{a}ln\left|ax+\sqrt{b^2+a^2x^2}\right|$+C.

82. $\int \frac{dx}{a^2x^2-e^2}$. Resp.: $\frac{1}{2ae}ln\left|\frac{ax-e}{ax+e}\right|$+C.

83. $\int \frac{x^2dx}{5-x^6}$. Resp.: $\frac{1}{6\sqrt{5}}ln\left|\frac{x^3+\sqrt{5}}{x^3-\sqrt{5}}\right|$+C.

84. $\int \frac{xdx}{\sqrt{1-x^4}}$. Resp.: $\frac{1}{2}arcsenx^2$+C.

85. $\int \frac{xdx}{x^4+a^4}$. Resp.: $\frac{1}{2a^2}arctg\frac{x^2}{a^2}$+C.

86. $\int \frac{e^xdx}{\sqrt{1-e^{2x}}}$. Resp.: $arcsene^x$+C.

87. $\int \frac{dx}{\sqrt{3-5x^2}}$. Resp.: $\frac{1}{\sqrt{5}}arcsen\sqrt{\frac{5}{3}}x$+C.

88. $\int \frac{cosxdx}{a^2+sen^2x}$. Resp.: $\frac{1}{a}arctg\left(\frac{senx}{a}\right)$+C.

89. $\int \frac{dx}{x\sqrt{1-ln^2x}}$. Resp.: $arcsen(lnx)$+C.

90. $\int \frac{arccosx-x}{\sqrt{1-x^2}}dx$. Resp.: $\frac{-1}{2}(arcosx)^2+\sqrt{1-x^2}$+C.

91. $\int \frac{x-arctgx}{1+x^2}dx$. Resp.: $\frac{1}{2}ln(1+x^2)-\frac{1}{2}(arctgx)^2$+C.

92. $\int \frac{\sqrt{1+lnx}}{x}dx$. Resp.: $\frac{2}{3}\sqrt{(1+lnx)^3}$+C.

93. $\int \frac{\sqrt{1+\sqrt{x}}}{\sqrt{x}}dx$. Resp.: $\frac{4}{3}\sqrt{(1+\sqrt{x})^3}$+C.

94. $\int \frac{dx}{\sqrt{x}\sqrt{1+\sqrt{x}}}$. Resp.: $4\sqrt{1+\sqrt{x}}$+C.

95. $\int \frac{e^x dx}{1+e^{2x}}$. Resp.: $arctge^x$+C.

96. $\int \frac{cosxdx}{\sqrt[3]{sen^2x}}$. Resp.: $3\sqrt[3]{senx}$+C.

97. $\int \sqrt{1+3cos^2x}sen2xdx$. Resp.: $\frac{-2}{9}\sqrt{(1+3cos^2x)^3}$+C.

98. $\int \frac{sen2x}{\sqrt{1+cos^2x}}dx$. Resp.: $-2\sqrt{1+cos^2x}$+C.

99. $\int \frac{cos^3x}{sen^4x}dx$. Resp.: $\frac{1}{senx}-\frac{1}{3sen^3x}$+C.

100. $\int \frac{\sqrt[3]{tg^2x}}{cos^2x}dx$. Resp.: $\frac{3}{5}\sqrt[3]{tg^5x}$+C.

101. $\int \frac{dx}{2sen^2x+3cos^2x}$. Resp.: $\frac{1}{\sqrt{6}}arctg\left(\sqrt{\frac{2}{3}}tgx\right)$+C.

Integrales del tipo $\int \frac{Ax+B}{ax^2+bx+c}dx$:

102. $\int \frac{dx}{x^2+2x+5}$. Resp.: $\frac{1}{2}arctg\frac{x+1}{2}$+C.

103. $\int \frac{dx}{3x^2-2x+4}$. Resp.: $\frac{1}{\sqrt{11}}arctg\frac{3x-1}{\sqrt{11}}$+C.

104. $\int \frac{dx}{x^2+3x+1}$. Resp.: $\frac{1}{\sqrt{5}}ln\left|\frac{2x+3-\sqrt{5}}{2x+3+\sqrt{5}}\right|$+C.

105. $\int \frac{dx}{x^2-6x+5}$. Resp.: $\frac{1}{4}ln\left|\frac{x-5}{x-1}\right|$+C.

106. $\int \frac{dx}{3x^2-2x+2}$. Resp.: $\frac{1}{\sqrt{5}} arctg \frac{3x-1}{\sqrt{5}}$+C.

107. $\int \frac{(6x-7)dx}{3x^2-7x+11}$. Resp.: $ln|3x^2-7x+11|$+C.

108. $\int \frac{(3x-2)dx}{5x^2-3x+2}$. Resp.: $\frac{3}{10} ln(5x^2-3x+2) - \frac{11}{5\sqrt{31}} artg \frac{10x-3}{\sqrt{31}}$+C.

109. $\int \frac{3x-1}{x^2-x+1} dx$. Resp.: $\frac{3}{2} ln(x^2-x+1) + \frac{1}{\sqrt{3}} artg \frac{2x-1}{\sqrt{3}}$+C.

110. $\int \frac{7x+1}{6x^2+x-1} dx$. Resp.: $\frac{2}{3} ln(3x+1) + \frac{1}{2} ln(2x+1)$+C.

111. $\int \frac{2x-1}{5x^2-x+2} dx$. Resp.: $\frac{1}{5} ln(5x^2-x+2) + \frac{8}{5\sqrt{39}} arctg \frac{10x-1}{\sqrt{39}}$+C.

112. $\int \frac{6x^4-5x^3+4x^2}{2x^2-x+1} dx$. Resp.: $x^3 - \frac{x^2}{2} + \frac{1}{4} ln|2x^2-x+1| + \frac{1}{2\sqrt{7}} arctg \frac{4x-1}{\sqrt{7}}$+C.

113. $\int \frac{dx}{2cos^2 x + senxcosx + sen^2 x}$. Resp.: $\frac{2}{\sqrt{7}} acrtg \frac{2tgx+1}{\sqrt{7}}$+C.

Integrales del tipo $\int \frac{Ax+B}{\sqrt{ax^2+bx+C}} dx$:

114. $\int \frac{dx}{\sqrt{-4x^2-3x+2}}$. Resp.: $\frac{1}{2} arcsen \frac{8x+3}{\sqrt{41}}$+C.

115. $\int \frac{dx}{\sqrt{x^2+x+1}}$. Resp.: $ln \left| x + \frac{1}{2} + \sqrt{x^2+x+1} \right|$+C.

116. $\int \frac{dS}{\sqrt{S^2+2aS}}$. Resp.: $ln \left| S + a + \sqrt{2aS+S^2} \right|$+C.

117. $\int \frac{dx}{\sqrt{-3x^2-7x+5}}$. Resp.: $\frac{1}{\sqrt{3}} arcsen \frac{6x+7}{\sqrt{109}}$+C.

118. $\int \frac{dx}{\sqrt{x(3x+5)}}$. Resp.: $\frac{1}{\sqrt{3}} ln|6x+5+\sqrt{12x(3x+5)}|$+C.

119. $\int \frac{dx}{\sqrt{-x^2-3x+2}}$. Resp.: $arsen \frac{2x+3}{\sqrt{17}}$+C.

120. $\int \frac{dx}{\sqrt{5x^2-x-1}}$. Resp.: $\frac{1}{\sqrt{5}}ln|10x-1+\sqrt{20(5x^2-x-1)}|$+C.

121. $\int \frac{2ax+b}{\sqrt{ax^2+bx+c}}dx$. Resp.: $2\sqrt{ax^2+bx+c}$+C.

122. $\int \frac{(x+3)dx}{\sqrt{4x^2+4x+3}}$. Resp.: $\frac{1}{4}\sqrt{4x^2+4x+3}+\frac{5}{4}ln|2x+1+\sqrt{4x^2+4x+3}|$+C.

123. $\int \frac{(x-3)dx}{\sqrt{-11x^2+66x+3}}$. Resp.: $\frac{-1}{11}\sqrt{3+66x-11x^2}$+C.

124. $\int \frac{(x+3)dx}{\sqrt{-4x^2+4x+3}}$. Resp.: $\frac{-1}{4}\sqrt{3+4x-4x^2}+\frac{7}{4}arcsen\frac{2x-1}{2}$+C.

125. $\int \frac{(3x+5)dx}{\sqrt{x(2x-1)}}$. Resp.: $\frac{3}{2}\sqrt{2x^2-x}+\frac{23}{4\sqrt{2}}ln(4x-1+\sqrt{8(2x^2-x)}$+C.

II. Integración por partes:

126. $\int xe^x dx$. Resp.: $e^x(x-1)$+C.

127. $\int xlnxdx$. Resp.: $\frac{1}{2}x^2\left(lnx-\frac{1}{2}\right)$+C.

128. $\int xsenxdx$. Resp.: $senx-xcosx$+C.

129. $\int lnxdx$. Resp.: $x(lnx-1)$+C.

130. $\int arcsenxdx$. Resp.: $xarcsenx+\sqrt{1-x^2}$+C.

131. $\int ln(1-x)dx$. Resp.: $-x-(1-x)ln(1-x)$+C.

132. $\int x^n lnxdx$. Resp.: $\frac{x^{n-1}}{n+1}\left(lnx-\frac{1}{n+1}\right)$+C.

133. $\int xarctgxdx$. Resp.: $\frac{1}{2}[(x^2+1)arctgx-x]$+C.

134. $\int xarcsenxdx$. Resp.: $\frac{1}{4}[(2x^2-1)arcsenx+x\sqrt{1-x^2}]$+C.

135. $\int (ln(x^2+1)dx$. Resp.: $xln(x+1) - 2x + 2arctgx$+C.

136. $\int arctg\sqrt{x}dx$. Resp.: $(x+1)arctg\sqrt{x} - \sqrt{x}$+C.

137. $\int \frac{arcsen\sqrt{x}}{\sqrt{x}}dx$. Resp.: $2\sqrt{x}arcsen\sqrt{x} + 2\sqrt{1-x}$+C.

138. $\int arcsen\sqrt{\frac{x}{x+1}}dx$. Resp.: $xarcsen\sqrt{\frac{x}{x+1}} - \sqrt{x} + arctg\sqrt{x}$+C.

139. $\int xcos^2 xdx$. Resp.: $\frac{x^2}{4} + \frac{1}{4}xsen2x + \frac{1}{8}cos2x$+C.

140. $\int \frac{xarcsenx}{\sqrt{1-x^2}}dx$. Resp.: $x - \sqrt{1-x^2}arcsenx$+C.

141. $\int \frac{xarctgx}{(x^2+1)^2}dx$. Resp.: $\frac{x}{4(1+x^2)} + \frac{1}{4}arctgx - \frac{1}{2}\frac{arctgx}{1+x^2}$+C.

142. $\int xarctg\sqrt{x^2-1}dx$. Resp.: $\frac{1}{2}x^2 arctg\sqrt{x^2-1} - \frac{1}{2}\sqrt{x^2-1}$+C.

143. $\int \frac{arcsenx}{x^2}dx$. Resp.: $ln\left|\frac{1-\sqrt{1-x^2}}{x}\right| - \frac{1}{x}arcsenx$+C.

144. $\int ln(x+\sqrt{1+x^2})dx$. Resp.: $xln\left|x+\sqrt{1+x^2}\right| - \sqrt{1+x^2}$+C.

145. $\int arcsenx\frac{xdx}{\sqrt{(1-x^2)^3}}$. Resp.: $\frac{arcsenx}{\sqrt{1-x^2}} + \frac{1}{2}ln\left|\frac{1-x}{1+x}\right|$+C.

Utilizar sustituciones trigonmétricas en los ejemplos siguientes:

146. $\int \frac{\sqrt{a^2-x^2}}{x^2}dx$. Resp.:$-\frac{\sqrt{a^2-x^2}}{x} - arcsen\frac{x}{a}$+C.

147. $\int x^2\sqrt{4-x^2}dx$. Resp.:$2arcsen\frac{x}{2} - \frac{1}{2}x\sqrt{4-x^2} + \frac{1}{4}x^3\sqrt{4-x^2}$+C.

148. $\int \frac{dx}{x^2\sqrt{1+x^2}}$. Resp.:$-\frac{\sqrt{1+x^2}}{x}$+C.

149. $\int \frac{\sqrt{x^2+a^2}}{x}dx$. Resp.:$\sqrt{x^2-a^2} - a\,arccos\frac{a}{x}$+C.

150. $\int \frac{dx}{(\sqrt{a^2+x^2})^3}$. Resp.:$\frac{x}{a^2}\frac{1}{\sqrt{a^2+x^2}}$+C.

Integración de funciones racionales:

151. $\int \frac{2x-1}{(x-1)(x-2)}dx$. Resp.:$ln\left|\frac{(x-2)^3}{x-1}\right|$+C.

152. $\int \frac{xdx}{(x+1)(x+3)(x+5)}$. Resp.:$\frac{1}{8}ln\frac{(x+3)^6}{(x+5)^5(x+1)}$+C.

153. $\int \frac{x^5+x^4-8}{x^3-4x}dx$. Resp.:$\frac{x^3}{3}+\frac{x^2}{2}+4x+ln\left|\frac{x^2(x-2)^5}{(x+2)^3}\right|$+C.

154. $\int \frac{x^4dx}{(x^2-1)(x+2)}$. Resp.:$\frac{x^2}{2}-2x+\frac{1}{6}ln\frac{(x-1)}{(x+1)^3}+\frac{16}{3}ln(x+2)$+C.

155. $\int \frac{(x-8)dx}{x^3-4x^2+4x}$. Resp.:$\frac{3}{x-2}+ln\frac{(x-2)^2}{x^2}$+C.

156. $\int \frac{(3x+2)dx}{x(x+1)^3}$. Resp.:$\frac{4x+3}{2(x+1)^2}+ln\frac{x^2}{(x+1)^2}$+C.

157. $\int \frac{x^2dx}{(x+2)^2(x+4)^2}$. Resp.:$-\frac{5x+12}{x^2+6x+8}+ln\left(\frac{x+4}{x+2}\right)^2$+C.

158. $\int \frac{dx}{x(x^2+1)}$. Resp.:$ln\frac{x}{\sqrt{x^2+1}}$+C.

159. $\int \frac{2x^2-3x-3}{(x-1)(x^2-2x+5)}dx$. Resp.:$ln\frac{(x^2-2x+5)^{\frac{3}{2}}}{x-1}+\frac{1}{2}arctg\frac{x-1}{2}$+C.

160. $\int \frac{x^3-6}{x^4+6x^2+8}dx$. Resp.:$ln\frac{x^2+4}{\sqrt{x^2+2}}+\frac{3}{2}arctg\frac{x}{2}-\frac{3}{\sqrt{2}}arctg\frac{x}{\sqrt{2}}$+C.

161. $\int \frac{2x^2-3x-3}{(x-1)(x^2-2x-5)}dx$. Resp.: $ln\frac{(x^2-2x-5)^{\frac{3}{2}}}{(x-1)}+\frac{1}{2}arctg\frac{x-1}{2}+C$.

162. $\int \frac{dx}{x^3+1}$. Resp.: $\frac{1}{6}ln\frac{(x+1)^2}{x^2-x+1}+\frac{1}{\sqrt{3}}arctg\frac{2x-1}{\sqrt{3}}+C$.

163. $\int \frac{3x-7}{x^3+x^2+4x+4}dx$. Resp.: $ln\frac{x^2+4}{(x+1)^2}+\frac{1}{2}arctg\frac{x}{2}+C$.

164. $\int \frac{4\,dx}{x^4+1}$. Resp.: $\frac{1}{\sqrt{2}}ln\frac{x^2+x\sqrt{2}+1}{x^2-x\sqrt{2}+1}+\sqrt{2}arctg\frac{\sqrt{2}x}{1-x^2}+C$.

165. $\int \frac{(4x^2-8x)dx}{(x-1)^2(x^2+1)^2}$. Resp.: $\frac{3x^2-1}{(x-1)(x^2+1)}+ln\frac{(x-1)^2}{x^2+1}+arctgx+C$.

166. $\int \frac{dx}{(x^2-x)(x^2-x-1)^2}$. Resp.: $ln\frac{x-1}{x}-\frac{10}{3\sqrt{3}}arctg\frac{2x-1}{\sqrt{3}}-$
$-\frac{2x-1}{3(x^2-x-1)}+C$.

Integracion de funciones irracionales:

167. $\int \frac{\sqrt{x}}{\sqrt[4]{x^3}+1}dx$ Resp.: $\frac{4}{3}\left[\sqrt[4]{x^3}-ln\left(\sqrt[4]{x^3}+1\right)\right]+C$

168. $\int \frac{\sqrt{x^3}-\sqrt[3]{x}}{6\sqrt[4]{x}}dx$ Resp.: $\frac{2}{27}\sqrt[4]{x^9}-\frac{2}{13}\sqrt[12]{x^{13}}+C$

169. $\int \sqrt{\frac{1-x}{1+x}}\frac{dx}{x^2}$ Resp.: $ln\left|\frac{\sqrt{1-x}+\sqrt{1+x}}{\sqrt{1-x}-\sqrt{1+x}}\right|-\frac{\sqrt{1-x^2}}{x}+C$

170. $\int \sqrt{\frac{1-x}{1+x}}\frac{dx}{x}$ Resp.: $ln\frac{\sqrt{1+x}-\sqrt{1-x}}{\sqrt{1+x}+\sqrt{1-x}}+2\,arctg\sqrt{\frac{1-x}{1+x}}+C$

171. $\int \frac{\sqrt[7]{x}+\sqrt{x}}{\sqrt[7]{x^8}+\sqrt[14]{x^{15}}}dx$ Resp.: $14\left[\sqrt[14]{x}-\frac{1}{2}\sqrt[7]{x}+\frac{1}{3}\sqrt[14]{x^3}-\frac{1}{4}\sqrt[7]{x^2}+\frac{1}{5}\sqrt[14]{x^5}\right]+C$.

172. $\int \sqrt{\frac{2+3x}{x-3}}dx$. Resp.: $\sqrt{3x^2-7x-6}+\frac{11}{2\sqrt{3}}ln\left(x-\frac{7}{6}+\sqrt{x^2-\frac{7}{3}x-2}\right)$+C.

Integrales del tipo $\int R(x,\sqrt{ax^2+bx+c})dx$

173. $\int \frac{dx}{x\sqrt{x^2-x+3}}$. Resp.: $\frac{1}{\sqrt{3}}ln\left|\frac{\sqrt{x^2-x+3}-\sqrt{3}}{x}+\frac{1}{2\sqrt{3}}\right|$+C.

174. $\int \frac{dx}{x\sqrt{-x^2+x+2}}$. Resp.: $\frac{-1}{\sqrt{2}}ln\left|\frac{\sqrt{-x^2+x+2}+\sqrt{2}}{x}+\frac{1}{2\sqrt{2}}\right|$+C.

175. $\int \frac{dx}{x\sqrt{x^2+4x-4}}$. Resp.: $\frac{1}{2}arcsen\frac{x-2}{x\sqrt{2}}$+C.

176. $\int \frac{\sqrt{x^2+2x}}{x}dx$. Resp.: $\sqrt{x^2+2x}+ln|x+1+\sqrt{x^2+2x}|$+C.

177. $\int \frac{dx}{\sqrt{(2x-x^2)^3}}$. Resp.: $\frac{x-1}{\sqrt{2x-x^2}}$+C.

178. $\int \sqrt{2x-x^2}dx$. Resp.: $\frac{1}{2}[(x-1)\sqrt{2x-x^2}+arcsen(x-1)]$+C.

179. $\int \frac{dx}{x-\sqrt{x^2-1}}$. Resp.: $\frac{x^2}{2}+\frac{x}{2}\sqrt{x^2-1}-\frac{1}{2}ln|x+\sqrt{x^2-1}|$+C.

180. $\int \frac{dx}{(1+x)\sqrt{1+x+x^2}}$. Resp.: $ln\left|\frac{x+\sqrt{1+x+x^2}}{2+x+\sqrt{1+x+x^2}}\right|$+C.

181. $\int \frac{x+1}{(2x+x^2)\sqrt{2x+x^2}}dx$. Resp.: $\frac{-1}{\sqrt{2x+x^2}}$+C.

182. $\int \frac{1-\sqrt{1+x+x^2}}{x\sqrt{1+x+x^2}}dx$. Resp.: $ln\left|\frac{2+x-2\sqrt{1+x+x^2}}{x^2}\right|$+C.

183. $\int \frac{\sqrt{x^2+4x}}{x^2}dx$. Resp.: $-\frac{8}{x+\sqrt{x^2+4x}}+ln|x+2+\sqrt{x^2+4x}|$+C.

Integración de los binomios diferenciales:

184. $\int \frac{\sqrt{1+\sqrt[3]{x}}}{\sqrt[3]{x^2}}dx$. Resp.: $2\left(1+x^{\frac{1}{3}}\right)^{\frac{3}{2}}$+C.

185. $\int x^{\frac{1}{3}}\left(2+x^{\frac{2}{3}}\right)^{\frac{1}{4}}dx$. Resp.: $\frac{10x^{\frac{2}{3}}-16}{15}\left(2+x^{\frac{2}{3}}\right)^{\frac{5}{4}}$+C.

186. $\int \frac{dx}{(1+x^2)^{\frac{3}{2}}}$. Resp.: $\frac{x}{\sqrt{1+x^2}}$+C.

187. $\int \frac{dx}{x^2(1+x^2)^{\frac{3}{2}}}$. Resp.: $-(1+x^2)^{\frac{-1}{2}}\left(2x+\frac{1}{x}\right)$+C.

188. $\int \sqrt[4]{\left(1+x^{\frac{1}{2}}\right)^3}dx$. Resp.: $\frac{8}{77}(7\sqrt{x}-4)(1+\sqrt{x})^{\frac{7}{4}}$+C.

189. $\int \frac{\sqrt{2-\sqrt[3]{x}}}{\sqrt[3]{x}}dx$. Resp.: $\frac{2(4+3\sqrt[3]{x})(2-\sqrt[3]{x}])^{\frac{3}{2}}}{5}$+C.

190. $\int x^5\sqrt[3]{(1+x^3)^2}dx$. Resp.: $\frac{5x^3-3}{40}(1+x^3)^{\frac{5}{3}}$+C.

Integración de las funciones trigonométricas:

191. $\int sen^3xdx$. Resp.: $\frac{1}{3}cos^3x - cosx$+C.

192. $\int sen^5xdx$. Resp.: $-cosx + \frac{2}{3}cos^3x - \frac{cos^5x}{5}$+C.

193. $\int cos^4xsen^3xdx$. Resp.: $-\frac{1}{5}cos^5x + \frac{1}{7}cos^7x$+C.

194. $\int \frac{cos^3x}{sen^4x}dx$. Resp.: $cscx - \frac{1}{3}csc^3x$+C.

195. $\int cos^2xdx$. Resp.: $\frac{x}{2} + \frac{1}{4}sen2x$+C.

196. $\int sen^4xdx$. Resp.: $\frac{3}{8}x - \frac{sen2x}{4} + \frac{sen4x}{32}$+C.

197. $\int cos^6xdx$. Resp.: $\frac{1}{16}(5x + 4sen2x - \frac{sen^32x}{3} + \frac{3}{4}sen4x)$+C.

198. $\int sen^4xcos^4xdx$. Resp.: $\frac{1}{128}\left(3x - sen4x + \frac{sen8x}{8}\right)$+C.

199. $\int tg^3xdx$. Resp.: $\frac{tg^2x}{2} + ln|cosx|$+C.

200. $\int cotg^5xdx$. Resp.: $-\frac{1}{4}cotg^4x + \frac{1}{2}cotg^2x + ln|senx|$+C.

201. $\int cotg^3xdx$. Resp.: $-\frac{cotg^2x}{2} - ln|senx|$+C.

202. $\int sc^3xdx$. Resp.: $\frac{tg^7x}{7} + \frac{3tg^5x}{5} + tg^3x + tgx$+C.

203. $\int tg^4xsc^4xdx$. Resp.: $\frac{tg^7x}{7} + \frac{tg^5x}{5}$+C.

204. $\int \frac{dx}{cos^4 x}$. Resp.: $tgx + \frac{1}{3}tg^3 x$+C.

205. $\int \frac{cosx}{sen^2 x}dx$. Resp.: $-cscx$+C.

206. $\int \frac{sen^3 x}{\sqrt[3]{cos^4 x}}dx$. Resp.: $\frac{3}{5}cos^{\frac{5}{3}}x + 3cos^{-\frac{1}{3}}x$+C.

207. $\int senxsen3xdx$. Resp.: $-\frac{sen4x}{8} + \frac{sen2x}{4}$+C.

208. $\int cos4xcos7xdx$. Resp.: $\frac{sen11x}{22} + \frac{sen3x}{6}$+C.

209. $\int cos2xsen4xdx$. Resp.: $-\frac{cos6x}{12} - \frac{cos2x}{4}$+C.

210. $\int sen\frac{1}{4}xcos\frac{3}{4}xdx$. Resp.: $-\frac{cosx}{2} + cos\frac{1}{2}x$+C.

211. $\int \frac{dx}{4 - 5senx}$. Resp.: $\frac{1}{3}ln\left|\frac{tg\frac{x}{2} - 2}{2tg\frac{x}{2} - 1}\right|$+C.

212. $\int \frac{dx}{5 - 3cosx}$. Resp.: $\frac{1}{2}arctg\left|2tg\frac{x}{2}\right|$+C.

213. $\int \frac{senxdx}{1 + senx}$. Resp.: $\frac{2}{1 + tg\frac{x}{2}} + x$+C.

214. $\int \frac{cosxdx}{1 + cosx}$. Resp.: $x - tg\frac{x}{2}$+C.

215. $\int \frac{sen2x}{cos^4 x + sen^4 x}dx$. Resp.: $arctg(2sen^2 x - 1)$+C.

216. $\int \frac{dx}{(1 + cosx)^2}$. Resp.: $\frac{1}{2}tg\frac{x}{2} + \frac{1}{6}tg^3\frac{x}{2}$+C.

217. $\int \frac{dx}{sen^2 x + tg^2 x}$. Resp.: $-\frac{1}{2}[cotgx + \frac{1}{\sqrt{2}}arctg\left(\frac{tgx}{\sqrt{2}}\right)]$+C.

218. $\int \frac{sen^2 x}{1 + cos^2 x}dx$. Resp.: $\sqrt{2}arctg\left(\frac{tgx}{\sqrt{2}}\right) - x$+C.

II. Calcular las siguientes integrales:

219. $\int \dfrac{dx}{x\sqrt{1-(lnx)^2}}$. Resp.: $arcsen(lnx)$+C.

220. $\int \dfrac{dx}{\sqrt{(1+x^2)ln(x+\sqrt{1+x^2})}}$. Resp.: $2\sqrt{ln(x+\sqrt{1+x^2})}$+C.

221. $\int (4+2x+x^2)e^{-2x}dx$. Resp.: $-\dfrac{1}{4}(2x^2+6x+11)e^{-2x}$+C.

222. $\int xsec^2axdx$. Resp.: $\dfrac{1}{a}xtgax+\dfrac{1}{a^2}ln(cosax)$+C.

223. Calcular una fórmula de reducción para la integral $\int \dfrac{x^n}{\sqrt{a^2-x^2}}dx$. Como aplicación, calcular $\int \dfrac{x^4}{\sqrt{a^2-x^2}}$+C.

224. Calcular una fórmula de reducción para la integral $I_n=\int \dfrac{dx}{(a^2+x^2)^n}$. Como aplicación, calcular I_3.

225. Calcular una fórmula de reducción para la integral $I_n=\int tag^nxdx$. Como aplicación, calcular I_5.

226. Calcular $\int \dfrac{x^5-x^4-3x+5}{x^4-2x^3+2x^2-2x+1}dx$. $I=\dfrac{x^2}{2}+x-\dfrac{1}{x-1}+ln(x^2+1)-2ln(x-1)+arctagx$+ C.

227. Calcular
$$\int \frac{x^3+x^2+x+1}{(x-3)\sqrt{x-2}\sqrt{x^3-x^2-5x-3}}dx$$
Resp.: $I=\sqrt{x^2-5x+6}+\dfrac{11}{2}Argch(2x-5)-20\sqrt{\dfrac{x-2}{x-3}}$+C.

228. Calcular
$$I=\int cos2xsen6xdx$$
Resp.: $I=-\dfrac{1}{16}(cos8x+2cos4x)$+C.

229. Calcular

$$I = \int sen^4 x cos^4 x dx$$

Resp.: $I = \frac{1}{64}(\frac{3}{2}x - \frac{1}{2}sen4x + \frac{1}{16}sen8x)$+C.