

APRENDE A INTEGRAR - 1ª PARTE

- $F(x)$ es una primitiva de $f(x)$ si $F'(x) = f(x)$

Ejemplo: $F(x) = x^2$ es primitiva de $f(x) = 2x$ ya que $F'(x) = 2x = f(x)$

- LA INTEGRAL DEFINIDA DE $f(x)$ ES EL CONJUNTO DE TODAS SUS PRIMITIVAS:

$$\int f(x)dx = F(x) + C \text{ tal que } F'(x) = f(x)$$

Ejemplo: $\int 2x dx = x^2 + C$

PROPIEDADES

$$\int a \cdot f(x)dx = a \cdot \int f(x)dx$$

$$\int (f(x) \pm g(x))dx = \int f(x)dx \pm \int g(x)dx$$

¡INTEGREMOS!

$$y = \int a dx = ax + C$$

1. $y = \int 3dx$

2. $y = \int \frac{2}{3}dx$

$$y = \int x dx = \frac{x^2}{2} + C$$

3. $y = \int 3x dx$

4. $y = \int (\frac{2}{3} - 2x)dx$

$$y = \int x^n dx = \frac{x^{n+1}}{n+1} + C, n \neq -1$$

5. $y = \int (x^2 - 3x + 5)dx$

$$6. y = \int \frac{x-2}{3} dx$$

$$7. y = \int (2x-1)^2 dx$$

$$8. y = \int \left(\frac{x^2-3x}{4} - 2x \right) dx$$

$$9. y = \int \left(\frac{3x^4-3x^2}{2x} - 3x^3 \right) dx$$

$$10. y = \int \frac{1}{x^4 \sqrt[3]{2x^5}} dx$$

$$y = \int \frac{1}{x} dx = \ln x + C$$

$$11. y = \int \left(\frac{3}{x} - x^2 \right) dx =$$

$$12. y = \int \left(\frac{4}{x^2} - x^3 + 5 \right) dx =$$

$$y = \int e^x dx = e^x + C$$

$$13. y = \int 3e^x - \frac{4}{3x} dx =$$

$$14. y = \int (3e^x - x^3 - 2x) dx =$$

$$15. y = \int (\frac{e^x}{4} - 3\sqrt{x} + 2)dx =$$

$$y = \int a^x dx = \frac{a^x}{Lna} + C$$

$$16. y = \int (5^x - x^2 + 3)dx =$$

$$17. y = \int (4^x - 3x^2 + e^x)dx =$$

$$18. y = \int (2^x - \frac{x^2 - 1}{2})dx =$$

$$19. y = \int \frac{3^x - x}{3}dx =$$

$$y = \int \text{sen} x dx = -\text{cos} x + C$$

$$20. y = \int (4\text{sen} x - x^2)dx$$

$$21. y = \int (\frac{-2\text{sen} x + 3x}{2})dx$$

$$y = \int \text{cos} x dx = \text{sen} x + C$$

$$22. y = \int (3\text{cos} x - e^x + 2)dx$$

$$23. y = \int \frac{3\cos x - 2\sin x}{4} dx$$

$$\boxed{y = \int \frac{1}{\cos^2 x} dx = \tan x + C} ; \boxed{y = \int (1 + \tan^2 x) dx = \tan x + C}$$

$$24. y = \int \frac{4}{\cos^2 x} dx$$

$$25. y = \int (2 + 2\tan^2 x) dx$$

$$26. y = \int (3\sec^2 x - 2x) dx$$

$$27. y = \int 4\tan^2 x dx$$

$$\boxed{y = \int \frac{1}{\sqrt{1-x^2}} dx = \arcsin(x) + C}$$

$$28. y = \int \frac{3}{\sqrt{1-x^2}} dx$$

$$\boxed{y = \int \frac{1}{1+x^2} dx = \arctan(x) + C}$$

$$29. y = \int \frac{4}{1+x^2} dx$$

$$y = \int f(x)^n \cdot f'(x)dx = \frac{f(x)^{n+1}}{n+1} + C, n \neq -1$$

$$30. y = \int (x+3)^3 dx$$

$$31. y = \int (3x+1)^3 dx$$

$$32. y = \int x(x^2-2)^3 dx$$

$$33. y = \int (4x^3+1)^3 x^2 dx$$

$$34. y = \int (2x+3) \cdot \sqrt{x^2+3x} dx$$

$$35. y = \int \frac{2x+1}{\sqrt{x^2+x}} dx$$

$$36. y = \int \frac{3}{\sqrt[3]{3x-5}} dx$$

$$37. y = \int 2\sin^3 x \cos x dx$$

$$y = \int \frac{f'(x)}{f(x)} dx = \ln f(x) + C$$

$$38. y = \int \frac{e^x}{e^x+3} dx$$

$$39. y = \int \frac{3x}{4x^2+3} dx$$

$$40. y = \int \frac{2\operatorname{sen}x}{-3\cos x + 1} dx$$

$$41. y = \int \frac{1}{x \operatorname{Ln} x} dx$$

$$42. y = \int \frac{2x + 3}{3x} dx$$

$$43. y = \int \frac{x - 2}{x + 3} dx$$

$$y = \int f'(x)e^{f(x)} dx = e^{f(x)} + C$$

$$44. y = \int e^{2x-1} dx$$

$$45. y = \int e^{x^2-2} x dx$$

$$46. y = \int \frac{e^{\operatorname{Ln} x}}{3x} dx$$

$$47. y = \int 3e^{2\operatorname{sen} x} \cos x dx$$

$$y = \int f'(x)a^{f(x)} dx = \frac{a^{f(x)}}{\operatorname{Ln} a} + C$$

$$48. y = \int 2^{3x-1} dx$$

$$49. y = \int 5^{x^2-1} x dx$$

$$y = \int f'(x) \operatorname{sen} f(x) dx = -\cos f(x) + C$$

$$50. y = \int e^x \operatorname{sen}(e^x - 1) dx$$

$$51. y = \int x \operatorname{sen}(x^2 - 3) dx$$

$$52. y = \int \operatorname{sen}(4x - 1) dx$$

$$y = \int \frac{f'(x)}{\cos^2 f(x)} dx = \operatorname{tg} f(x) + C ; \quad y = \int f'(x)(1 + \operatorname{tg}^2 f(x)) dx = \operatorname{tg} f(x) + C$$

$$53. y = \int \frac{3}{\cos^2(3x - 1)} dx$$

$$54. y = \int (2 + 2 \operatorname{tg}^2(2x - 1)) dx$$

$$y = \int \frac{f'(x)}{\sqrt{1 - f(x)^2}} dx = \operatorname{arcsen} f(x) + C$$

$$y = \int \frac{f'(x)}{1 + f(x)^2} dx = \operatorname{arctg} f(x) + C$$

$$55. y = \int \frac{3x}{1 + 4x^2} dx$$

$$56. y = \int \frac{3}{1 + 4x^2} dx$$

$$57. y = \int \frac{4x}{1 + 8x^4} dx$$

58. $y = \int \frac{2x}{1+x^4} dx$

59. $y = \int \frac{3x^2}{1+4x^2} dx$

60. $y = \int \frac{\sin x}{\sqrt{1-4\cos^2 x}} dx$

61. $y = \int \frac{e^x}{\sqrt{1-4e^{2x}}} dx$

UN POCO DE TODO

$$62. y = \int (3 + 2x + x^4 - \frac{2}{x} - \sqrt[3]{x^2})dx$$

$$63. y = \int (5^x - 3x^5)dx$$

$$64. y = \int \frac{3\operatorname{sen}x}{2\cos x - 2}dx$$

$$65. y = \int \frac{2}{\sqrt{3x-1}}dx$$

$$66. y = \int \frac{4x}{\sqrt{(3x^2+4)^2}}dx$$

$$67. y = \int \frac{x^2}{x^3-3}dx$$

$$68. y = \int (3x-1)^3dx$$

$$69. y = \int \frac{e^{\sqrt{x}}}{\sqrt{2x}}dx$$

$$70. y = \int \frac{3}{\sqrt{x}(1-2\sqrt{x})}dx$$

$$71. y = \int \frac{2^x - 4^x}{3^x}dx$$

$$72. y = \int \frac{3+x^2}{x^2} dx$$

$$73. y = \int (\sqrt{3x} + \sqrt{\frac{1}{3x}}) dx$$

$$74. y = \int \frac{\sqrt{2x} - 3\sqrt[3]{2x^2}}{\sqrt{3x^3}} dx$$

$$75. y = \int \frac{\cos(2x)}{\sqrt{3 + \sin(2x)}} dx$$

$$76. y = \int \sqrt{3x} \sqrt{x} dx$$

$$77. y = \int \frac{3Ln^2x}{2x} dx$$

$$78. y = \int \frac{(2Ln x)^2}{4x} dx$$

$$79. y = \int \frac{x^2}{3x^3 - 2} dx$$

$$80. y = \int tg(3x)dx$$

$$81. y = \int \frac{1}{tg(2x)}dx$$

$$82. y = \int \frac{2x - x^4 + 3x^2}{2x}dx$$

$$83. y = \int \frac{2x^2 - 1}{x - 2}dx$$

$$84. y = \int \frac{2^x}{5^x}dx$$

$$85. y = \int \frac{2^{\sqrt{x}}}{\sqrt{3x}}dx$$

$$86. y = \int \frac{e^{3x} - e^{-2x}}{3}dx$$

$$87. y = \int \frac{\cos(Lnx)}{2x}dx$$

88. $y = \int (2x^4 - 2x)^3(4x^3 - 1)dx$

89. $y = \int e^{3x-2}dx$

MarieLMates