

TABLAS DE DERIVADAS RESUMEN DE DERIVADAS

Polinómicas, potenciales, exponenciales, logarítmicas y trigonométricas.

FUNCIÓN	DERIVADA	EJEMPLO	EJEMPLO
CONSTANTE			
$f(x) = k$	$f'(x) = 0$	$f(x) = 4$	$f'(x) = 0$
POLINÓMICAS			
$f(x) = x$	$f'(x) = 1$	$f(x) = x$	$f'(x) = 1$
$f(x) = kx$	$f'(x) = k$	$f(x) = 5x$	$f'(x) = 5$
$f(x) = u \pm v \pm w \dots$	$f'(x) = u' \pm v' \pm w' \dots$	$f(x) = 3x + 2 - 2x$	$f'(x) = 3 - 2 = 1$
$f(x) = u \cdot v$	$f'(x) = u' \cdot v + v' \cdot u$	$f(x) = x^2(3x + 1)$	$f'(x) = 2x(3x + 1) + 3x^2$
$f(x) = \frac{u}{v}$	$f'(x) = \frac{u'v - v'u}{v^2}$	$f(x) = \frac{x^2}{x+1}$	$f'(x) = \frac{2x(x+1) - x^2}{(x+1)^2}$
$f(x) = \frac{k}{u}$	$f'(x) = -\frac{k \cdot u'}{u^2}$	$f(x) = \frac{3}{x^2 + 1}$	$f'(x) = -\frac{6x}{(x^2 + 1)^2}$
FUNCIONES POTENCIALES			
$f(x) = u^m$	$f'(x) = m \cdot u^{m-1} \cdot u'$	$f(x) = 3x^2$ $g(x) = (2x^2 + 1)^3$	$f'(x) = 6x$ $g'(x) = 3(2x^2 + 1)^2 \cdot 4x$
$f(x) = \frac{1}{u^m}$	$f'(x) = -\frac{m u'}{u^{m+1}}$	$f(x) = \frac{1}{(2x-1)^2}$	$f'(x) = -\frac{4}{(2x-1)^3}$
$f(x) = \sqrt{u}$	$f'(x) = \frac{u'}{2\sqrt{u}}$	$f(x) = \sqrt{x^3 - 2x}$	$f'(x) = \frac{3x^2 - 2}{2\sqrt{x^3 - 2x}}$
$f(x) = \sqrt[a]{u} = u^{\frac{1}{a}}$	$f'(x) = \frac{1}{a} u^{\frac{1}{a}-1} \cdot u' = \frac{u'}{a \sqrt[a]{u^{a-1}}}$	$f(x) = \sqrt[4]{3x}$	$f'(x) = \frac{3}{4\sqrt[4]{(3x)^3}}$
FUNCIONES EXPONENCIALES			
$f(x) = e^u$	$f'(x) = u' e^u$	$f(x) = e^{2x^3}$	$f'(x) = 6x^2 e^{2x^3}$
$f(x) = a^u$	$f'(x) = u' a^u \ln(a)$	$f(x) = 2^{3x-1}$	$f'(x) = 3 \cdot 2^{3x-1} \cdot \ln 2$
$f(x) = u^v$	$f'(x) = v \cdot u^{v-1} \cdot u' + u^v \cdot v' \cdot \ln u$	$f(x) = (2x)^{x^3}$	$f'(x) = x^3(2x)^{x^3-1} \cdot 2 + (2x)^{x^3} \cdot 3x^2 \cdot \ln 2x$
FUNCIÓN LOGARÍTMICA			
$f(x) = \ln u$	$f'(x) = \frac{u'}{u}$	$f(x) = \ln(3x^2 - 2)$	$f'(x) = \frac{6x}{3x^2 - 2}$
$f(x) = \text{Log}_a u$	$f'(x) = \frac{u'}{u} \cdot \text{Log}_a e$	$f(x) = \text{Log}(2x+1)$	$f'(x) = \frac{2}{2x+1} \text{Log} e$

TRIGONOMÉTRICAS

$f(x) = \operatorname{sen} u$	$f'(x) = u' \cos u$	$f(x) = \operatorname{sen} (3x^2)$	$f'(x) = 6x \cos (3x^2)$
$f(x) = \cos u$	$f'(x) = -u' \operatorname{sen} u$	$f(x) = \cos (x^3 + 2x)$	$f'(x) = -(3x^2 + 2) \operatorname{sen}(x^3 + 2x)$
$f(x) = \operatorname{tg} u$	$f'(x) = \frac{u'}{\cos^2 u}$ ó $f'(x) = u' \cdot (1 + \operatorname{tg}^2 u)$	$f(x) = \operatorname{tg} 2x$	$f'(x) = \frac{2}{\cos^2(2x)}$ ó $f'(x) = 2(1 + \operatorname{tg}^2 2x)$
$f(x) = \sec u$	$f'(x) = u' \cdot \sec u \cdot \operatorname{tag} u$ ó $f'(x) = \frac{u' \cdot \operatorname{sen} u}{\cos^2 u}$	$f(x) = \sec 5x^3$	$f'(x) = \frac{15x^2 \operatorname{sen} 5x^3}{\cos^2 5x^3}$
$f(x) = c \sec u$	$f'(x) = -u' \cdot c \sec u \cdot \operatorname{ctag} u$ ó $f'(x) = \frac{-u' \cdot \cos u}{\operatorname{sen}^2 u}$	$f(x) = c \sec 3x^2$	$f'(x) = \frac{-6x \cdot \cos 3x^2}{\operatorname{sen}^2 3x^2}$
$f(x) = \operatorname{ctg} u$	$f'(x) = \frac{-u'}{\operatorname{sen}^2 u} = -u'(1 + \operatorname{ctg}^2 u)$	$f(x) = \operatorname{ctg} 2x$	$f'(x) = \frac{-2}{\operatorname{sen}^2 2x}$
$f(x) = \operatorname{arcsen} u$	$f'(x) = \frac{u'}{\sqrt{1-u^2}}$	$f(x) = \operatorname{arcsen} x^2$	$f'(x) = \frac{2x}{\sqrt{1-x^4}}$
$f(x) = \operatorname{arccos} u$	$f'(x) = -\frac{u'}{\sqrt{1-u^2}}$	$f(x) = \operatorname{arccos} 3x$	$f'(x) = -\frac{3}{\sqrt{1-9x^2}}$
$f(x) = \operatorname{arctag} u$	$f'(x) = \frac{u'}{1+u^2}$	$f(x) = \operatorname{arctg} 2x^3$	$f'(x) = \frac{6x^2}{1+4x^6}$

Calcula las derivadas de las siguientes funciones:

1. $f(x) = \frac{3}{2}x^3 + \frac{2}{5}x^2 - \frac{4}{7}x - 5$

2. $f(x) = \frac{2x+9}{5}$

3. $f(x) = x(x+2)$

4. $f(x) = x^2(7-2x)$

5. $f(x) = \text{Ln}(x^4 - 2x)$

6. $f(x) = 6x^5 - 3x^4$

7. $f(x) = (2x-5)(4-3x)$

8. $f(x) = (x^2-1)(2-3x^2)$

9. $f(x) = \text{sen}(3x^2)$

10. $f(x) = \frac{1}{2x^3}$

11. $f(x) = \frac{2}{x-3}$

12. $f(x) = (x^2-3x+2)(3-2x+4x^2)$

13. $f(x) = (1+5x^3)(1+3x^2)$

14. $f(x) = (-x^4-2)(5x-7x^2)$

15. $f(x) = \frac{2x+5}{3}$

16. $f(x) = \frac{3}{x^2}$

17. $f(x) = (a+2x)(b-3x^2)$

18. $f(x) = (3x^2-5x+4)^3$

19. $f(x) = \sqrt[4]{3x}$

20. $f(x) = \frac{5x-8}{3}$

21. $f(x) = (5x^2+4x-3)(2x-7)$

22. $f(x) = \left(\frac{2}{3}x - \frac{3}{4}x^2 + 5\right)^4$

23. $f(x) = \text{tg}(6x^2-2)$

24. $f(x) = \sqrt{x}$

25. $f(x) = \text{Ln}(3x^3+5x)$

26. $f(x) = \sqrt[3]{3x}$

27. $f(x) = -\frac{5}{3x^4}$

28. $f(x) = (3x^4-3x^2+5)^4$

29. $f(x) = (1-2x+3x^2-4x^3)^5$

30. $f(x) = \frac{4}{x^2}$

31. $f(x) = (3x^2-1)(5x+2) - (x^2+1)(3x-4)$

32. $f(x) = e^{3x^4-5x^3}$

33. $f(x) = \sqrt[5]{3x^2}$

34. $f(x) = (2x-5)(3x^2-7x+2) - (4x^3-3x^2+5x-8)$

35. $f(x) = \frac{6}{x^3}$

36. $f(x) = (x^2-1)^3(2x^2-3x+2)^3$

37. $f(x) = x^2e^{2x-1}$

38. $f(x) = (ax^2+b)^4(mx^3-px)^5$

39. $f(x) = \frac{2x-8}{3x+5}$

40. $f(x) = \frac{a+x}{a-x}$

41. $f(x) = (\cos(x^3+x^5))^3$

42. $f(x) = \frac{7}{3x-2}$

43. $f(x) = \sqrt[4]{x-5}$

44. $f(x) = \frac{2x-3}{3-x}$

45. $f(x) = (x^2-3x) \cdot \text{Log}3x^3$

46. $f(x) = \frac{x^2+5}{x^2+6}$

47. $f(x) = \frac{7-x}{2+3x-x^2}$

48. $f(x) = \text{arctg}(x+2)$

49. $f(x) = 2\sqrt[5]{x^4-1}$

50. $f(x) = \frac{\cos(3x^2+2x)}{(x^2-1)}$

51. $f(x) = \frac{x^4-3x^2+7x}{2x+5}$

52. $f(x) = \text{sen}(\cos(2x))$

53. $f(x) = 3^{(x^2+2)(3-2x)}$

54. $f(x) = \sqrt{2x} + \sqrt[3]{x} - \frac{1}{x}$

55. $f(x) = \text{arcsen}(x^2+2)$

56. $f(x) = \frac{\text{Sen}(2x^3)}{x^2-1}$

57. $f(x) = \sqrt[3]{5+4x^2}$

58. $f(x) = \frac{2x^3-3x^2-2x-4}{2x^2-3x+6}$

59. $f(x) = \left(\frac{2x}{x^3-2}\right)^2$
60. $f(x) = \frac{x^4-3x^2+5}{4x^2-5x+8}$
61. $f(x) = \text{sen } x^2 \cdot \cos 3x$
62. $f(x) = x^2 + \sqrt{x^3-2}$
63. $f(x) = \text{sen}^3(3x^5-3x)$
64. $f(x) = \frac{x \cdot (x^4+2x)}{\sqrt{x^3}}$
65. $f(x) = \sqrt{1+x} + \sqrt{1-x}$
66. $f(x) = \text{sen}(\text{Log}(x^3-2x))$
67. $f(x) = \frac{(x^2-3x+4)^2}{2x^3-2x+5}$
68. $f(x) = \frac{(2x+3)^3}{(3x^2-2x+6)^2}$
69. $f(x) = c \sec(3x^2-2x+1)$
70. $f(x) = (x^2-1)\sqrt[4]{3x}$
71. $f(x) = \frac{2x-5x^2+x^3}{(2x-8)(3x-4)}$
72. $f(x) = \frac{3x \cdot \text{sen } x}{x^5-4}$
73. $f(x) = \sqrt[4]{2-x}$
74. $f(x) = \sqrt[5]{5x^2+2x-7}$
75. $f(x) = x^2 \text{Ln } x^2 - \text{sen}(3x^2+x)$
76. $f(x) = \sqrt{2x+1} - \sqrt{x^2-x+1}$
77. $f(x) = \sqrt{3x} - \sqrt{3-x}$
78. $f(x) = \sqrt{x+1} - \frac{1}{\sqrt{x+1}}$
79. $f(x) = \sec\left(\frac{2}{x}\right)$
80. $f(x) = x\sqrt{3x^2-1}$
81. $f(x) = (x^2-x+1)\sqrt{1-x^2}$
82. $f(x) = (x+1)\sqrt{2x}$
83. $f(x) = \frac{\sqrt{x+4}}{x}$
84. $f(x) = (3x-2)\sqrt{x^2+1}$
85. $f(x) = \frac{1+x}{\sqrt{1-x}}$
86. $f(x) = \sqrt{\frac{1-x}{1+x}}$
87. $f(x) = \text{Ln } \sqrt{x^3+1}$
88. $f(x) = (2x+5)\sqrt{x^2-3x+2}$
89. $f(x) = \frac{x^2+5x-2}{\sqrt[3]{3x^2-2x+5}}$
90. $f(x) = \frac{\sqrt{3x-5}}{\sqrt{5x^2-5x+4}}$
91. $\text{ctg}\left(\frac{2x}{x^2-3}\right)$
92. $f(x) = \frac{\sqrt[4]{2x^3-3x^2}}{(3x^2-2x+6)^2}$
93. $f(x) = \text{Ln}\left(\frac{\cos x^2}{\text{sen}(x^2+1)}\right)$
94. $f(x) = (x^3-6) \cdot \text{Ln}(x^4-2)$
95. $f(x) = \log\left(\frac{8x^4+4x^5}{4x^3-1}\right)$
96. $\sqrt{2-3x} + \sqrt{2+3x}$
97. $f(x) = \arccos\left(\frac{3x-1}{x^2}\right)$
98. $f(x) = \text{tg}\left(\frac{5x^3}{4}\right)$
99. $f(x) = 5^{2x-1} \cdot (x^2+4x-3)$
100. $f(x) = 3^{\arccos(7x^2-3)}$