Derivadas

1. $y = 5x^6 - 3x^5 + 3x^3 - 2$
2. $y = x^{-4} + 2x^{-3} + x - 4$
3. $y = 3x^{10} + 2\sqrt{x} + \frac{3}{x}$
4. $y = \sqrt{3} \cdot x^3 - p \cdot x + \sqrt{3}$
5. $y = 4\,\text{sen}x - 3\cos x$
6. $y = 2\sqrt{x} + \frac{2}{x} + x^5$
7. $y = 4x^3 + 2x^3 - x^3 + 4$
8. $y = \frac{p}{2} \cdot \cos x - 3\sqrt{x}$
9. $y = \cos(3x)$
10. $y = \cos^2(x^3)$
11. $y = \text{sen}\,(3x^2 - 2x)$
12. $y = \cos(x^2)$
13. $y = \text{sen}^3(2x^2)$
14. $y = \cos^4(3x^4)$
15. $y = 3\,\text{sen}^2(2x - 3)$
16. $y = \cos^5(3x^2)$
17. $y = \cos\,(\text{sen}x)$
18. $y = \cos^2(\text{sen}(3x))$
19. $y = \sqrt[3]{\cos^2 x}$
20. $y = \sqrt[3]{\cos^2(x^2)}$
21. $y = \sqrt{x^2 - 3x}$
22. $y = \sqrt[3]{(x^2 - 3x)^2}$
23. $y = \left(2\sqrt{x} - 3x\right)^3$
24. $y = \sqrt[3]{\text{sen}^2 x}$
25. $y = \sqrt[5]{\text{sen}(3x)}$
26. $y = \sqrt{3x - \text{sen}x}$
27. $y = \left(3x^2 - \sqrt{1 - x^2}\right)^3$
28. $y = \text{sen}\left(\sqrt{3x^2 - 5x}\right)$
29. $y = \sqrt{\text{sen}^3 x + (x - 1)^3}$
30. $y = \cos^3\left(x^2 - 3\sqrt{x}\right)$
31. $y = \frac{x}{5}$
32. $y = \frac{5}{x}$
33. $y = \frac{x^4 - 3x}{4}$
34. $y = \frac{x^3 - 3}{x}$
35. $y = \frac{(x^4 - 3x)^2}{3}$
36. $y = \frac{(x - 1)^3}{3x}$
37. $y = \frac{x^2}{x^2 - 1}$
38. $y = \frac{\sqrt{3x}}{x}$
39. $y = \sqrt{\frac{3}{x}}$
40. $y = \frac{x}{\sqrt{3x}}$
41. $y = \sqrt[3]{3x^2 - \text{sen}x}$
42. $y = \ln(3x - 1)$
43. $y = \ln\,(x^2 - 3x)$
44. $y = \ln\sqrt{x - 2}$
45. $y = \log_2(3x^2)$
46. $y = e^{x^2}$
47. $y = 2^x$
48. $y = e^{x^2 - 2x}$
49. $y = 3^{\text{sen}x}$
50. $y = tg\,(x^3)$
51. $y = 3\,e^{x^2 - 3x}$
52. $y = \sqrt{e^{\cos x}}$
53. $y = 3\,tg^2 x$
54. $y = (x^2 - 1).(x - 1)$
55. $y = x^2 \cdot \ln x$
56. $y = e^{x^2} \cdot \cos x$
57. $y = x^4 \cdot e^{3x}$
58. $y = e^{x^4 - 3x^2} \cdot \text{sen}\,x$

59. $y = ln\, x^2 \cdot e^{sen\, x}$

60. $y = \dfrac{1}{ln\sqrt{x}}$

61. $y = \left(\dfrac{x^2 - 3}{x^2 + 1} \right)^3$

62. $y = ln\, x \cdot e^{x^2 - senx}$

63. $y = \left(\cos^2 3x - sen^3 x \right) \cdot e^{x^3}$

64. $y = \left(\dfrac{ln\, x^2}{x^3 - 2} \right)^2$

65. $y = \dfrac{ln\, x}{3^x}$

66. $y = \dfrac{e^x + ln\, x}{x^2 - senx}$

67. $y = ln \left(\dfrac{sen\, x}{e^x} \right)$

68. $y = \sqrt{\dfrac{sen\, x}{x - 1}}$

69. $y = \dfrac{3x^4 - 2x^2 + 3x - 2}{2x - 1}$

70. $y = \left(sen\,(e^{3x}) \right)^2 \cdot \cos x$

71. $y = arctg\,(x^2)$

72. $y = arcsen\ x^3$

73. $y = ln\,(\sec x)$

74. $y = arctg\,(ln\, x)$

75. $y = arcsen\, x \cdot e^{cosx}$

76. $y = arctg\,(e^{3x})$

77. $y = ln \left(\dfrac{tgx}{e^{3x^2}} \right)$

78. $y = arcsen \left(\dfrac{x + 1}{e^x} \right)$

79. $y = ln \left(arctg(5x) \right)$

80. $y = arctg \sqrt{x^3}$

81. $y = 5\ arctg^2 (senx)$

82. $y = 3^{arctg(x^2)}$

83. $y = \dfrac{arcsen\,(3x - 2)}{x^2}$

84. $y = \dfrac{sen\, x - tg\, x}{\sqrt{4x - 3}}$

85. $y = x^{senx}$

86. $y = (sen\, x)^{x^2}$

87. $y = (\cos x)^{x^3 - x}$

88. $y = 4^{arctg\,(ln\, x)}$

89. $y = ln \left(\dfrac{x + 2}{x^2} \right)^3$

90. $y = \left(\dfrac{e^{3x}}{senx} \right)^{x^2}$

91. $y = 10^{\left(\frac{senx - e^x}{3x - cosx} \right)}$

92. $y = \cos \left(\dfrac{tg \sqrt{x}}{sen\,(ln\, x)} \right)$

93. $y = \dfrac{x^{cosx}}{(ln\, x)^3}$

94. $y = \cos^2 (4e^x) \cdot ln \left(\dfrac{tgx}{3^{x^2}} \right)$

95. $y = \sqrt[3]{\dfrac{sen^2 (e^x)}{arctg\,(cosx)}}$

96. $y = \sqrt{\dfrac{e^{ln(\cos x)}}{5^{\cos x}}}$

97. $y = \dfrac{\sqrt{\cos(e^x) \cdot x}}{\sqrt{e^{tgx}}}$

98. $y = \left(tg\,(e^x) + x^2 \right)^x$

99. $y = \sqrt{\dfrac{arctg\, e^x \cdot \cos x}{ln\,(x^2 - x)}}$

100. $y = \dfrac{ln \sqrt{\cos x}}{sen\,(e^{cosx})}$

SOLUCIONES Todas las soluciones se dan sin simplificar

1. $y' = 30x^5 - 15x^4 + 9x^2$

2. $y' = -4x^{-5} - 6x^{-4} + 1$

3. $y' = 30x^9 + \frac{1}{\sqrt{x}} - \frac{3}{x^2}$

4. $y' = 3\sqrt{3} \cdot x^2 - \pi$

5. $y' = 4\cos x + 3\,sen\,x$

6. $y' = \frac{1}{\sqrt{x}} - \frac{2}{x^2} + 5x^4$

7. $y' = 15x^2$

8. $y' = -\frac{\pi}{2}\,sen\,x - \frac{3}{2\sqrt{x}}$

9. $y' = -3\,sen(3x)$

10. $y' = -2\cos(x^3) \cdot sen(x^3) \cdot 3x^2$

11. $y' = \cos(3x^2 - 2x) \cdot (6x - 2)$

12. $y' = -sen(x^2) \cdot 2x$

13. $y' = 3\,sen^2(2x^2) \cdot \cos(2x^2) \cdot 4x$

14. $y' = 4\cos^3(3x^4) \cdot \left(-sen(3x^4)\right) \cdot 12x^3$

15. $y' = 6\,sen(2x-3) \cdot \cos(2x-3) \cdot 2$

16. $y' = 5\cos^4(3x^2) \cdot (-sen(3x^2)) \cdot 6x$

17. $y' = -sen(senx) \cdot cosx$

18. $y' = 2\cos(sen3x) \cdot (-sen(sen3x)) \cdot \cos 3x \cdot 3$

19. $y' = \frac{-2\,cosx \cdot senx}{3\sqrt[3]{\cos^4 x}}$

20. $y' = \frac{-2\cos(x^2) \cdot sen(x^2) \cdot 2x}{3\sqrt[3]{\cos^4(x^2)}}$

21. $y' = \frac{2x-3}{2\sqrt{x^2-3x}}$

22. $y' = \frac{2(x^2-3x)(2x-3)}{3\sqrt[3]{(x^2-3x)^4}}$

23. $y' = 3\left(2\sqrt{x} - 3x\right)^2 \cdot \left(\frac{1}{\sqrt{x}} - 3\right)$

24. $y' = \frac{2\,senx\,cosx}{3\sqrt[3]{sen^4 x}}$

25. $y' = \frac{3\cos 3x}{5\sqrt[5]{sen^4(3x)}}$

26. $y' = \frac{3 - cosx}{2\sqrt{3x - senx}}$

27. $y' = 3\left(3x^2 - \sqrt{1-x^2}\right)^2 \cdot \left(6x - \frac{-2x}{2\sqrt{1-x^2}}\right)$

29. $y' = \frac{3\,sen^2 x\,cosx + 3(x-1)^2}{2\sqrt{sen^3 x + (x-1)^3}}$

28. $y' = \cos\left(\sqrt{3x^2-5x}\right) \cdot \frac{6x-5}{2\sqrt{3x^2-5x}}$

30. $y' = -3\cos^2\left(x^2 - 3\sqrt{x}\right) \cdot sen\left(x^2 - 3\sqrt{x}\right) \cdot \left(2x - \frac{3}{2\sqrt{x}}\right)$

31. $y' = \frac{1}{5}$

32. $y = -\frac{5}{x^2}$

33. $y' = \frac{4x^3 - 3}{4}$

34. $y' = 2x + \frac{3}{x^2}$

35. $y' = \frac{2(x^4-3x)^2 \cdot (4x^3-3)}{3}$

36. $y' = \frac{3(x-1)^2 \cdot 3x - 3(x-1)^3}{(3x)^2}$

37. $y' = \frac{2x(x^2-1) - x^2 \cdot 2x}{(x^2-1)^2}$

38. $y' = \frac{\frac{3}{2\sqrt{3x}} \cdot x - \sqrt{3x}}{x^2}$

39. $y' = \dfrac{1}{2\sqrt{\dfrac{3}{x}}} \cdot \dfrac{-3}{x^2}$

40. $y' = \dfrac{\sqrt{3x} - x\,\dfrac{3}{2\sqrt{3x}}}{3x}$

41. $y' = \dfrac{6x - \cos x}{3\sqrt[3]{(3x^2 - \operatorname{sen} x)^2}}$

42. $y' = \dfrac{3}{3x-1}$

43. $y' = \dfrac{2x - 3}{x^2 - 3x}$

44. $y' = \dfrac{\dfrac{1}{2\sqrt{x-2}}}{\sqrt{x-2}}$

45. $y' = \dfrac{6x}{3x^2 \cdot \ln 2}$

46. $y' = e^{x^2} \cdot 2x$

47. $y' = 2^x \cdot \ln 2$

48. $y' = e^{x^2-2x} \cdot (2x-2)$

49. $y' = 3^{\operatorname{sen} x} \cdot \cos x \cdot \ln 3$

50. $y' = \dfrac{3x^2}{\cos^2(x^3)}$

51. $y' = 3\, e^{x^2-3x} \cdot (2x-3)$

52. $y' = \dfrac{-e^{\cos x}\, \operatorname{sen} x}{2\sqrt{e^{\cos x}}}$

53. $y' = \dfrac{6\, tgx}{\cos^2 x}$

54. $y = 2x\,(x-1) + (x^2-1)$

55. $y' = 2x \cdot \ln x + \dfrac{x^2}{x}$

56. $y' = e^{x^2}\, 2x\, \cos x - e^{x^2}\, \operatorname{sen} x$

57. $y' = 4x^3 \cdot e^{3x} + x^4\, e^{3x} \cdot 3$

58. $y' = e^{x^4-3x^2} \cdot (4x^3 - 6x)\, \operatorname{sen} x + e^{x^4-3x^2} \cos x$

59. $y' = \dfrac{2x}{x^2} \cdot e^{\operatorname{sen} x} + \ln x^2\, e^{\operatorname{sen} x} \cos x$

60. $y' = \dfrac{-\dfrac{\dfrac{1}{2\sqrt{x}}}{\sqrt{x}}}{(\ln \sqrt{x})^2}$

61. $y' = 3\left(\dfrac{x^2-3}{x^2+1}\right)^2 \cdot \dfrac{2x(x^2+1) - (x^2-3)\,2x}{(x^2+1)^2}$

62. $y' = \dfrac{1}{x} \cdot e^{x^2-\operatorname{sen} x} + \ln x \cdot e^{x^2-\operatorname{sen} x}\,(2x - \cos x)$

63. $y' = \left(2\cos 3x\,(-\operatorname{sen} 3x)\,3 - 3\operatorname{sen}^2 x\, \cos x\right) \cdot e^{x^3} + (\cos^2 3x - \operatorname{sen}^3 x)\, e^{x^3}\, 3x^2$

64. $y' = 2\left(\dfrac{\ln x^2}{x^3-2}\right) \cdot \dfrac{\dfrac{2x}{x^2}(x^3-2) - \ln x^2\, 3x^2}{(x^3-2)^2}$

65. $y' = \dfrac{\dfrac{1}{x}\, 3^x - \ln x\, 3^x \ln 3}{(3^x)^2}$

66. $y' = \dfrac{\left(e^x + \dfrac{1}{x}\right)(x^2 - \operatorname{sen} x) - (e^x + \ln x)\,(2x - \cos x)}{(x^2 - \operatorname{sen} x)^2}$

67. $y' = \dfrac{e^x}{\operatorname{sen} x} \dfrac{\cos x\, e^x - e^x\, \operatorname{sen} x}{(e^x)^2}$

68. $y' = \dfrac{1}{2\sqrt{\dfrac{\operatorname{sen} x}{x-1}}} \cdot \dfrac{\cos x\,(x-1) - \operatorname{sen} x}{(x-1)^2}$

69. $y' = \dfrac{(12x^3 - 4x + 3)(2x - 1) - (3x^4 - 2x^2 + 3x - 2) \cdot 2}{(2x - 1)^2}$

70. $y' = 2\left(\operatorname{sen}(e^{3x})\right) \cdot \cos(e^{3x}) \cdot e^{3x}\ 3\ \cos x - \left(\operatorname{sen}(e^{3x})\right)^2 \cdot \operatorname{sen} x$

71. $y' = \dfrac{2x}{1 + x^4}$

72. $y' = \dfrac{3x^2}{\sqrt{1 - x^6}}$

73. $y' = \dfrac{\dfrac{\operatorname{sen} x}{\cos^2 x}}{\sec x}$

74. $y' = \dfrac{\dfrac{1}{x}}{1 + (\ln x)^2}$

75. $y' = \dfrac{e^{\cos x}}{\sqrt{1 - x^2}} - \operatorname{arcsen} x \quad e^{\cos x}\ \operatorname{sen} x$

76. $y' = \dfrac{e^{3x} \cdot 3}{1 + (e^{3x})^2}$

77. $y' = \dfrac{e^{3x^2}}{tgx} \cdot \dfrac{\dfrac{e^{3x^2}}{\cos^2 x} - tgx\ e^{3x^2}\ 6x}{\left(e^{3x^2}\right)^2}$

78. $y' = \dfrac{\dfrac{e^x - (x+1)e^x}{(e^x)^2}}{\sqrt{1 - \left(\dfrac{x+1}{e^x}\right)^2}}$

79. $y' = \dfrac{1}{\operatorname{arctg}(5x)} \dfrac{5}{1 + (5x)^2}$

80. $y' = \dfrac{\dfrac{3x^2}{2\sqrt{x^3}}}{1 + x^3}$

81. $y' = 10\ \operatorname{arctg}(\operatorname{sen} x) \dfrac{\cos x}{1 + \operatorname{sen}^2 x}$

82. $y' = 3^{\operatorname{arctg}(x^2)} \dfrac{2x}{1 + x^4} \ln 3$

83. $y' = \dfrac{\dfrac{3x^2}{\sqrt{1 - (3x - 2)^2}} - \operatorname{arcsen}(3x - 2)\ 2x}{x^4}$

84. $y' = \dfrac{\left(\cos x - \dfrac{1}{\cos^2 x}\right)\sqrt{4x - 3} - (\operatorname{sen} x - tg\, x)\dfrac{4}{2\sqrt{4x - 3}}}{4x - 3}$

85. $y' = \left(\cos x \cdot \ln x + \dfrac{\operatorname{sen} x}{x}\right) \cdot x^{\operatorname{sen} x}$

86. $y' = \left(2x\ \ln(\operatorname{sen} x) + \dfrac{x^2 \cos x}{\operatorname{sen} x}\right)(\operatorname{sen} x)^{x^2}$

87. $y = \left((3x^2 - 1)\ \ln \cos x - \dfrac{(x^3 - x)\operatorname{sen} x}{\cos x}\right) \cdot (\cos x)^{x^3 - x}$

88. $y' = 4^{\operatorname{arctg}(\ln x)} \cdot \dfrac{\dfrac{1}{x}}{1 + (\ln x)^2} \cdot \ln 4$

89. $y' = \dfrac{1}{\left(\dfrac{x+2}{x^2}\right)^3} \cdot 3\left(\dfrac{x+2}{x^2}\right)^2 \cdot \dfrac{x^2 - 2x(x+2)}{x^4}$

90. $y' = \left(2x\ ln\ x \left(\frac{e^{3x}}{senx} \right) + x^2 \frac{senx}{e^{3x}} \frac{3e^{3x} senx - e^{3x} cosx}{sen^2 x} \right) . \left(\frac{e^{3x}}{senx} \right)^{x^2}$

91. $y' = 10^{\left(\frac{senx - e^x}{3x - cosx} \right)} . ln\ 10\ \frac{(cosx - e^x)(3x - cosx) - (senx - e^x)(3 + senx)}{(3x - cosx)^2}$

92. $y' = -sen\left(\frac{tg\sqrt{x}}{sen(ln\ x)} \right) . \frac{\frac{1}{\cos^2\sqrt{x}} . \frac{1}{2\sqrt{x}} . sen(ln\ x) - tg\sqrt{x} . \cos(ln\ x) . \frac{1}{x}}{sen^2(ln\ x)}$

93. $y' = \frac{\left(-senx\ ln\ nx + \frac{cosx}{x} \right) x^{cosx} (ln\ x)^3 - x^{cosx}\ 3\ (ln\ x)^2 \frac{1}{x}}{(ln\ x)^6}$

94.

$y' = 2\ \cos(4e^x) . (-sen(4e^x) . 4\ e^x . ln\left(\frac{tgx}{3^{x^2}} \right) + \cos^2(4e^x) . \frac{3^{x^2}}{tgx} \frac{\frac{3^{x^2}}{\cos^2 x} - tgx . 3^{x^2} . 2x . ln\ 3}{\left(3^{x^2}\right)2}$

95. $y = \frac{1}{2\sqrt{\frac{e^{ln(cosx)}}{5^{cosx}}}} . \frac{e^{ln(cosx)} \frac{-senx}{cosx} . 5^{cosx} - e^{ln(cosx)} . 5^{cosx} (-senx)\ ln\ 5}{\left(5^{cosx}\right)^2}$

96.

$y' = \frac{1}{3\sqrt[3]{\frac{sen^2(e^x)}{arctg(\cos x)}}} . \frac{2\ sen(e^x) . \cos(e^x) . e^x . arctg(cosx) - sen^2(e^x) . \frac{1}{1 + \cos^2 x} . (-senx)}{arctg^2(cosx)}$

97. $y' = \frac{\frac{-sen(e^x)\ e^x\ x + \cos(e^x)}{\sqrt{\cos(e^x) . x}} . \sqrt{e^{tgx}} - \sqrt{\cos(e^x) . x} . \frac{1}{2\sqrt{e^{tgx}}} . e^{tgx} . \frac{1}{\cos^2 x}}{e^{tgx}}$

98. $y' = \left(ln\ (tge^x + x^2) + x \frac{\frac{e^x}{\cos^2(e^x)} + 2x}{tge^x + x^2} \right) . \left(tg(e^x) + x^2 \right)^x$

99.

$y' = \frac{1}{2\sqrt{\frac{arctg\ e^x . \cos x}{ln(x^2 - x)}}} . \frac{\left(\frac{e^x}{1 + (e^x)^2} \cos x - arctg\ e^x\ senx \right) ln(x^2 - x) - (arctg\ e^x\ cosx) \frac{2x - 1}{x^2 - x}}{ln^2(x^2 - x)}$

100. $y' = \frac{\frac{1}{\sqrt{cosx}} \frac{-senx}{2\sqrt{cosx}}\ sen(e^{cosx}) - ln\sqrt{\cos x}\ \cos(e^{cosx})\ e^{cosx}\ (-senx)}{sen^2(e^{cosx})}$