

DERIVADAS

TABLA DE DERIVADAS	
$y = C$	$y' = 0$
$y = f(x)^n$	$y' = n f(x)^{n-1} f'(x)$
$y = f(x) \pm g(x)$	$y' = f'(x) \pm g'(x)$
$y = c \cdot f(x)$	$y' = c \cdot f'(x)$
$y = f(x) \cdot g(x)$	$y' = f'(x) \cdot g(x) + g'(x) \cdot f(x)$
$y = \frac{f(x)}{g(x)}$	$y' = \frac{f'(x) \cdot g(x) - g'(x) \cdot f(x)}{g(x)^2}$
$y = \sqrt[n]{f(x)}$	$y' = \frac{1}{n \sqrt[n]{f(x)^{n-1}}} \cdot f'(x)$
$y = L \cdot f(x)$	$y' = \frac{1}{f(x)} \cdot f'(x)$
$y = e^{f(x)}$	$y' = e^{f(x)} \cdot f'(x)$
$y = a^{f(x)}$	$y' = a^{f(x)} \cdot f'(x) \cdot L a$
$y = \operatorname{sen} f(x)$	$y' = \cos f(x) \cdot f'(x)$
$y = \cos f(x)$	$y' = -\operatorname{sen} f(x) \cdot f'(x)$
$y = \operatorname{tg} f(x)$	$y' = \frac{1}{\cos^2 f(x)} \cdot f'(x)$
$y = \operatorname{cotg} f(x)$	$y' = \frac{-1}{\operatorname{sen}^2 f(x)} \cdot f'(x)$
$y = \operatorname{arc} \operatorname{sen} f(x)$	$y' = \frac{1}{\sqrt{1 - f(x)^2}} \cdot f'(x)$
$y = \operatorname{arc} \cos f(x)$	$y' = \frac{-1}{\sqrt{1 - f(x)^2}} \cdot f'(x)$
$y = \operatorname{arc} \operatorname{tg} f(x)$	$y' = \frac{1}{1 + f(x)^2} \cdot f'(x)$
$y = \operatorname{arc} \operatorname{cotg} f(x)$	$y' = \frac{-1}{1 + f(x)^2} \cdot f'(x)$

1. $y = 5x^6 - 3x^5 + 3x^3 - 2$

3. $y = 3x^{10} + 2\sqrt{x} + \frac{3}{x}$

5. $y = 4 \operatorname{sen} x - 3 \cos x$

7. $y = 4x^3 + 2x^3 - x^3 + 4$

9. $y = \cos(3x)$

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

13. $y = \operatorname{sen}^3(2x^2)$

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

17. $y = \cos(\operatorname{sen} x)$

19. $y = \sqrt[3]{\cos^2 x}$

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

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

25. $y = \sqrt[5]{\operatorname{sen}(3x)}$

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

29. $y = \sqrt{\operatorname{sen}^3 x + (x - 1)^3}$

31. $y = \frac{x}{5}$

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

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

37. $y = \frac{x^2}{x^2 - 1}$

39. $y = \sqrt{\frac{3}{x}}$

2. $y = x^4 + 2x^3 + x - 4$

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

6. $y = 2\sqrt{x} + \frac{2}{x} + x^5$

8. $y = \frac{\pi}{2} \cdot \cos x - 3\sqrt{x}$

10. $y = \cos^2(x^3)$

12. $y = \cos(x^2)$

14. $y = \cos^4(3x^4)$

16. $y = \cos^5(3x^2)$

18. $y = \cos^2(\operatorname{sen}(3x))$

20. $y = \sqrt[3]{\cos^2(x^2)}$

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

24. $y = \sqrt[3]{\operatorname{sen}^2 x}$

26. $y = \sqrt{3x - \operatorname{sen} x}$

28. $y = \operatorname{sen}\left(\sqrt{3x^2 - 5x}\right)$

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

32. $y = \frac{5}{x}$

34. $y = \frac{x^3 - 3}{x}$

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

38. $y = \frac{\sqrt{3x}}{x}$

40. $y = \frac{x}{\sqrt{3x}}$

41. $y = \sqrt[3]{3x^2 - \operatorname{sen} x}$

43. $y = \ln(x^2 - 3x)$

45. $y = \log_2(3x^2)$

47. $y = 2^x$

49. $y = 3^{\operatorname{sen} x}$

51. $y = 3e^{x^2 - 3x}$

53. $y = 3 \operatorname{tg}^2 x$

55. $y = x^2 \cdot \ln x$

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

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

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

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

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

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

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

71. $y = \operatorname{arctg}(x^2)$

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

75. $y = \operatorname{arcsen} x \cdot e^{\cos x}$

42. $y = \ln(3x - 1)$

44. $y = \ln \sqrt{x - 2}$

46. $y = e^{x^2}$

48. $y = e^{x^2 - 2x}$

50. $y = \operatorname{tg}(x^3)$

52. $y = \sqrt{e^{\cos x}}$

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

56. $y = e^{x^2} \cdot \cos x$

58. $y = e^{x^4 - 3x^2} \cdot \operatorname{sen} x$

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

62. $y = \ln x \cdot e^{x^2 - \operatorname{sen} x}$

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

66. $y = \frac{e^x + \ln x}{x^2 - \operatorname{sen} x}$

68. $y = \sqrt{\frac{\operatorname{sen} x}{x - 1}}$

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

72. $y = \operatorname{arcsen} x^3$

74. $y = \operatorname{arctg}(\ln x)$

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

$$77. y = \ln \left(\frac{\operatorname{tg} x}{e^{3x^2}} \right)$$

$$79. y = \ln (\operatorname{arctg}(5x))$$

$$81. y = 5 \operatorname{arctg}^2 (\operatorname{sen} x)$$

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

$$85. y = x^{\operatorname{sen} x}$$

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

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

$$91. y = 10 \left(\frac{\operatorname{sen} x - e^x}{3x - \cos x} \right)$$

$$93. y = \frac{x^{\cos x}}{(\ln x)^3}$$

$$95. y = \sqrt[3]{\frac{\operatorname{sen}^2(e^x)}{\operatorname{arctg}(\cos x)}}$$

$$97. y = \frac{\sqrt{\cos(e^x) \cdot x}}{\sqrt{e^{\operatorname{tg} x}}}$$

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

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

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

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

$$84. y = \frac{\operatorname{sen} x - \operatorname{tg} x}{\sqrt{4x-3}}$$

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

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

$$90. y = \left(\frac{e^{3x}}{\operatorname{sen} x} \right)^{x^2}$$

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

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

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

$$98. y = (\operatorname{tg}(e^x) + x^2)^x$$

$$100. y = \frac{\ln \sqrt{\cos x}}{\operatorname{sen}(e^{\cos x})}$$

SOLUCIONES 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. $y' = 4 \cos x + 3 \operatorname{sen} x$

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

7. $y' = 15x^2$

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

9. $y' = -3 \operatorname{sen}(3x)$

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

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

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

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

14. $y' = 4 \cos^3(3x^4) \cdot (-\operatorname{sen}(3x^4)) \cdot 12x^3$

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

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

17. $y' = -\operatorname{sen}(\operatorname{sen} x) \cdot \cos x$

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

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

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

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. $y' = \frac{2 \operatorname{sen} x \cos x}{3 \sqrt[3]{\operatorname{sen}^4 x}}$

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

26. $y' = \frac{3 - \cos x}{2 \sqrt{3x - \operatorname{sen} x}}$

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

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

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

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

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

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

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

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

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

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

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

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

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

$$40. y' = \frac{\sqrt{3x} - x \cdot \frac{3}{2\sqrt{3x}}}{3x}$$

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

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

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

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

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

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

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

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

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

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

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

$$52. y' = \frac{-e^{\cos x} \sin x}{2\sqrt{e^{\cos x}}}$$

$$53. y' = \frac{6 \operatorname{tg} x}{\cos^2 x}$$

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

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

$$56. y' = e^{x^2} 2x \cos x - e^{x^2} \sin x$$

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

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

$$59. y' = \frac{2x}{x^2} \cdot e^{\operatorname{sen} x} + \ln x^2 e^{\operatorname{sen} x} \cos x \quad 60. y' = \frac{\frac{1}{2\sqrt{x}} - \frac{2\sqrt{x}}{\sqrt{x}}}{(\ln \sqrt{x})^2}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

$$77. y' = \frac{e^{3x^2}}{\operatorname{tg} x} \cdot \frac{\frac{e^{3x^2}}{\cos^2 x} - \operatorname{tg} x \cdot e^{3x^2} \cdot 6x}{(e^{3x^2})^2}$$

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

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

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

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

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

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

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

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

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

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

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

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

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

$$91. y' = 10^{\left(\frac{\operatorname{sen} x - e^x}{3x - \cos x} \right)} \cdot \ln 10 \frac{(\cos x - e^x)(3x - \cos x) - (\operatorname{sen} x - e^x)(3 + \operatorname{sen} x)}{(3x - \cos x)^2}$$

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

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

94.

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

$$95. y = \frac{1}{2 \sqrt{\frac{e^{\ln(\cos x)}}{5^{\cos x}}}} \cdot \frac{e^{\ln(\cos x)} \frac{-\operatorname{sen} x}{\cos x} \cdot 5^{\cos x} - e^{\ln(\cos x)} \cdot 5^{\cos x} (-\operatorname{sen} x) \ln 5}{(5^{\cos x})^2}$$

96.

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

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

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

99.

$$y' = \frac{1}{2 \sqrt{\frac{\arctg e^x \cdot \cos x}{\ln(x^2 - x)}}} \cdot \frac{\left(\frac{e^x}{1 + (e^x)^2} \cos x - \arctg e^x \operatorname{sen} x \right) \ln(x^2 - x) - (\arctg e^x \cos x) \frac{2x - 1}{x^2 - x}}{\ln^2(x^2 - x)}$$

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