HOJAS DE DERIVADAS

$y = x^3 - 2x + 1$

$y' = 3x^2 - 2$

$y = (2x-1)^5$

$y' = 10(2x-1)^4$

$y = cotg(3x)$

$y' = -3\text{cosec}^2(3x)$

$y = \sqrt{7x+3}$

$y' = \dfrac{7}{2\sqrt{7x+3}}$

$y = arcsen(8x)$

$y' = \dfrac{8}{\sqrt{1-64x^2}}$

$y = e^{2x}$

$y' = 2e^{2x}$

$y = x \cdot tg\, x$

$y' = tg\, x + x\, sec^2 x$

$y = \ln(x^2 + x)$

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

$y = sen\, x^3$

$y' = 3x^2 \cos x^3$

$y = 3^{5x}$

$y' = 5 \cdot 3^{5x} \cdot \ln 3$

$y = arc\, tg\, x^2$

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

$y = \sqrt[4]{5x}$

$y' = \dfrac{5}{4\sqrt[4]{(5x)^3}}$

$y = tg(x^2+1)$

$y' = 2x\, sec^2(x^2+1)$

$y = \dfrac{2}{(3x-1)^4}$

$y' = \dfrac{-24}{(3x-1)^5}$

$y = sec\, 5x$

$y' = 5\, sec(5x)\, tg(5x)$

$y = x^x$

$y' = x^x(1 + \ln x)$

$y = arc\cos(3x^2)$

$y' = \dfrac{-6x}{\sqrt{1-9x^4}}$

$y = \ln \dfrac{x^2-2}{2x-1}$

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

$y = 8\, sen(5x)$

$y' = 40\cos(5x)$

$y = x^2 - \cos x$

$y' = 2x + sen\, x$

$y = \ln(x^2-4)^3$

$y' = \dfrac{6x}{x^2-4}$

$y = \log(5x+2)$

$y' = \dfrac{5}{5x+2}\log e$

$y = \dfrac{5x}{x^2+1}$

$y' = \dfrac{5-5x^2}{(x^2+1)^2}$

$y = \dfrac{senx}{2x}$

$y' = \dfrac{xcosx - senx}{2x^2}$

$y = x^{\cos x}$

$y' = x^{\cos x} \cdot \left(-sen\, x \cdot \ln x + \dfrac{1}{x}\cos x \right)$

$y = cosec\, x^2$

$y' = -2x\, cosec\, x^2\, cotg\, x^2$

59. $y = 3x + \sec x$

Solución:

$y' = 3 + \sec x\, tg\, x$

53. $y = (x^2 - 3)e^x$

Solución:

$y' = (x^2 + 2x - 3)e^x$

54. $y = x \operatorname{sen} x$

Solución:

$y' = \operatorname{sen} x - x \cos x$

55. $y = 7 \operatorname{tg} 3x$

Solución:

$y' = 21 \sec^2 3x$

56. $y = (2x + 3)^2$

Solución:

$y' = 4(2x + 3)$

57. $y = \sqrt{\operatorname{sen} x}$

Solución:

$$y' = \frac{\cos x}{2\sqrt{\operatorname{sen} x}}$$

58. $y = e^{x^2 + 3}$

Solución:

$y' = 2xe^{x^2 + 3}$

60. $y = 2x + \sqrt{x + 1}$

Solución:

$$y' = 2 + \frac{1}{2\sqrt{x + 1}}$$

61. $y = 5 \operatorname{arc\,sen} 4x$

Solución:

$$y' = \frac{20}{\sqrt{1 - 16x^2}}$$

62. $y = L\,(3x - 2)$

Solución:

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

63. $y = x^{3x}$

Solución:

$L\,y = 3x\,L\,x$

$y' = 3x^{3x}\,(L\,x + 1)$

64. $y = \operatorname{tg}(x^3 + 1)$

Solución:

$y' = 3x^2 \sec^2 (x^3 + 1)$

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

Solución:

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

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

Solución:

$L\,y = x\,L \operatorname{sen} x$

$y' = (\operatorname{sen} x)^x (L \operatorname{sen} x + x \operatorname{cotg} x)$

71. $y = \operatorname{arc\,cos} x^2$

Solución:

$$y' = -\frac{2x}{\sqrt{1 - x^4}}$$

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

Solución:

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

73. $y = L \sqrt[4]{x^3 + 5x - 7}$

Solución:

$$y' = \frac{1}{4} \cdot \frac{3x^2 + 5}{x^3 + 5x - 7}$$

138. $y = \operatorname{arc\,tg}\, L\,x$

Solución:

$$y' = \frac{1}{x(1 + L^2 x)}$$

139. $y = \operatorname{arc\,tg}\, L \dfrac{1}{x}$

Solución:

$y = \operatorname{arc\,tg}(L\,1 - L\,x) = \operatorname{arc\,tg}(-L\,x)$

$$y' = -\frac{1}{x(1 + L^2 x)}$$

140. $y = e^{\sec x}$

Solución:

$y' = e^{\sec x} \sec x \operatorname{tg} x$

103. $$y = \frac{9}{x^2 - 3}$$

Solución:

$$y' = -\frac{18x}{(x^2 - 3)^2}$$

104. $y = \operatorname{sen} x \operatorname{tg} x$

Solución:

$y' = \cos x \operatorname{tg} x + \operatorname{tg} x \sec x = \operatorname{tg} x\,(\cos x + \sec x)$

105. $y = x^{L\,x}$

Solución:

$L\,y = L\,x\,L\,x \Rightarrow L\,y = (L\,x)^2$

$y' = \dfrac{L\,x}{x} 2x^{L x}$

106. $y = L\,(\cos x)^2$

Solución:

$y' = -2 \operatorname{tg} x$

65. $y = 2^{7x}$

Solución:

$y' = 7 \cdot 2^{7x} \, L\, 2$

66. $y = \text{arc tg } 3x^2$

Solución:

$$y' = \frac{6x}{1 + 9x^4}$$

67. $y = \sqrt[3]{x^2 + 1}$

Solución:

$$y' = \frac{2x}{3\sqrt[3]{(x^2 + 1)^2}}$$

68. $y = \cos 5x^2$

Solución:

$y' = -10x \text{ sen } 5x^2$

74. $y = L \text{ sen } x$

Solución:

$y' = \text{cotg } x$

75. $y = \text{cosec } (5x + 2)$

Solución:

$y' = -5 \text{ cosec } (5x + 2) \text{ cotg } (5x + 2)$

76. $y = \log x^2$

Solución:

$$y' = \frac{2}{x}$$

77. $y = \dfrac{\text{tg } x}{x}$

Solución:

$$y' = \frac{x \sec^2 x - \text{tg } x}{x^2}$$

95. $y = \sqrt{1 - x^2}$

Solución:

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

96. $y = \dfrac{1}{2}x - \text{tg } x$

Solución:

$$y' = \frac{1}{2} - \sec^2 x$$

97. $y = \dfrac{1 + \text{sen } x}{1 - \text{sen } x}$

Solución:

$$y' = \frac{2 \cos x}{(1 - \text{sen } x)^2}$$

98. $y = (\text{sen } x)^{\cos x}$

Solución:

$L\, y = \cos x \, L \text{ sen } x$

$y' = (\text{sen } x)^{\cos x} (-\text{sen } x \, L \text{ sen } x + \cos x \text{ cotg } x)$

99. $y = \dfrac{x + 3}{x - 2}$

Solución:

$$y' = -\frac{5}{(x - 2)^2}$$

100. $y = \text{arc cos } x^2$

Solución:

$$y' = -\frac{2x}{\sqrt{1 - x^4}}$$

101. $y = \dfrac{\sec x}{x}$

Solución:

$$y' = \frac{x \sec x \text{ tg } x - \sec x}{x^2}$$

102. $y = \sqrt{x + \text{sen } x}$

Solución:

$$y' = \frac{1 + \cos x}{2\sqrt{x + \text{sen } x}}$$

107. $y = \text{arc sen } \dfrac{x^2}{5}$

Solución:

$$y' = \frac{2x}{\sqrt{25 - x^4}}$$

108. $y = \sqrt{\dfrac{x + 3}{x - 3}}$

Solución:

$$y' = \frac{\dfrac{-6}{(x - 3)^2}}{2\sqrt{\dfrac{x + 3}{x - 3}}} = -\frac{3\sqrt{x - 3}}{(x - 3)^2\sqrt{x + 3}}$$

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

Solución:

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

110. $y = \dfrac{\sec^5 x}{5} - \dfrac{\sec^3 x}{3}$

Solución:

$y' = \text{tg } x (\sec^5 x - \sec^3 x)$

111. $y = \text{arc tg } \dfrac{x}{2}$

Solución:

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

112. $y = \text{sen } 2x \cos 2x$

Solución:

$y' = 2(\cos^2 2x - \text{sen}^2 2x) = 2 \cos 4x$

113. $y = 2^{\text{sen } x}$

Solución:

$y' = \cos x \, 2^{\text{sen } x} \, L\, 2$

114. $y = L\sqrt{\dfrac{x + 1}{x - 1}}$

Solución:

$$y = \frac{1}{2}[L(x + 1) - L(x - 1)]$$

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