LOGARITHMIC FUNCTION

If $y = \ln x \ then \ \frac{dy}{dx} = 1/x$

Also Properties of ln

$$\ln (ab) = lna + lnb ;$$

$$\ln \left(\frac{a}{b}\right) = lna - \ln b$$

$$lna^n = nlna$$

solve by using ln properties

1. Y = ln (x^2 + 1)
2. Y = x^2 $3\sqrt{7x - 14}$ /(1 + x^2)^4
3. Y = ln 2x
4. Y = ln (x)^3
5. Y= (ln)^2
6. Y = ln (x^2 – 3x +2)
7. Y = ln (2 + $\sqrt{x}$)
8. Y = ln (2/1 + x^3)
9. Y = ln (ln x)
10. Y = ln $\sqrt{lnx}$
11. Y = x^3 ln (3 – 2x)
12. Y = x [in (x^2 – 2x)^3]
13. Y = (x^2 + 1) ln (3 – 2x)
14. Y = $\sqrt{1 + ln}^2$ x
15. Y = ln x / 1 + ln x
16. Y = x^2/1 + ln x
17. Y = x $3\sqrt{1 + x}^2$
18. Y $5\sqrt{x - 1/x + 1}$
19. Y = (x^2 – 8)$^{1/3}$ /x^6 – 7x + $5\sqrt{x}^{3+1}$

20. $Y = x^{3x2}$
21. $Y = (x^3 + 2x)^{lnx}$
22. $Y = (1 + x)^{1/x}$
23. $Y = x^2 - x^x$
24. $Y = 2^x$
25. $X^n a^x$
26. a^{2x+1} ;
27. a^{bx2} ;
28. $(a + b)^x$
29. ln(x/a) ;
30. ln $(ax^2 + bx + c)$;
31. ln x^2
32. ln $(x^3 + 3)$;
33. x ln x ;
34. ln (px + p)
35. ln [a+x) / (a – x)] ;
36. ln {x $\sqrt{x}^2$ ^{2}+ 1}
37. $\sqrt{x}$ - ln (+ $\sqrt{x}$) ;
38. ln $\sqrt{x}$ + 1 ;
39. ln (1/$\sqrt{x}$)
40. ln {$\sqrt{x}$ -1 + $\sqrt{x+1}$ } ;
41. ln a + $\sqrt{x}$ / a – $\sqrt{x}$
42. ln x / (a - $\sqrt{a}^2 – x^2$)
43. ln ($\sqrt{x}$ 3$\sqrt{x+3}$ 5$\sqrt{3+2}$)
44. X^x (l + ln x) ;
45. ln (2 + x) / (x + 1) ;
46. ln x /3$\sqrt{x}$
47. ¼ ln x . $x^{x4 + 1}$;
48. 1/4ln x . uln $x^2)^2$;
49. $x^{3/2}$
50. ln cos x/x^2 ;
51. Csc 6 x/Csc 2x ;

52. cos x – 1/cos x -1 ;
53. cos 2x – cos x/$\sin^2$ x
54. 5x + 2 lnx/x + 3 lnx ;
55. x $(1-x^2)^2$ / $(1 + x^2)^{1/2}$
56. ln $(x + 3)^2$;
57. ln [$(x^3 + 2) (x^2 + 3)$] ;
58. ln ln $x^4/(3 x – 4)^2$
59. ln (3x + 2) ;
60. ln (1 – 2x) ;
61. ln ($4 – x^2$)
62. ln (5x -3) ;
63. $\sqrt{1 + \ln x}$;
64. ln (ln (x + 1)