

- 1) Write the expression as a single natural logarithm. # in front is the exponent in the exponential
 $3 \ln 5$ $\ln 5^3 = \ln 125$
- 2) Write the expression below as a single natural logarithm. addition is multiplying
 $\ln 9 + \ln 6$ $\ln 9(6) = \ln 54$
- 3) Write the expression as a single natural logarithm. # in front is the exponent in the exponential
 $4 \ln 2$ $\ln 2^4 = \ln 16$
- 4) Write the expression below as a single natural logarithm. addition is multiplying
 $\ln 3 + \ln 7$ $\ln 3(7) = \ln 21$
- 5) Write the expression as a single natural logarithm. # in front is the exponent in the exponential
 $5 \ln x - \ln y$ $\ln \frac{x^5}{y}$ subtraction is dividing

$\ln = \log_e$ then $\ln e$ cancel each other out
 $\ln x = 4$ then $x = e^4$ AND $x = e^3 = \ln x = 3$

- 6) Solve the equation. when you have \ln you add the e
 $\ln x = -7$ $x = e^{-7}$ calculator: 2nd $\ln -7$ = .0009
- 7) Solve the equation. Check your answer. when you have \ln you add the e
 $\ln(9x - 4) = 6$ $9x - 4 = e^6$ calculator: end $\ln 6$ enter + 4 enter $\div 9$ enter 45.27
- 8) Solve for t . when you have e you add the \ln
 $e^t = 398$ $t = \ln 398$ calculator: $\ln 398$ = 5.9865
- 9) Use natural logarithms to solve the equation. when you have e you add the \ln
 $e^{5x} = 18$ $5x = \ln 18$ calculator: $\ln 18$ enter $\div 5$ = .5781
- 10) Use natural logarithms to solve the equation. when you have e you add the \ln
 $e^{x+2} = 20$ $x+2 = \ln 20$ calculator: $\ln 20$ enter - 2 = .9957

11) Simplify the expression.

$$\ln e^{87}$$

87

Ine cancel each other out

12) Simplify the expression.

$$\ln e^{89}$$

89

Ine cancel each other out