

**Beverly Hills High School -- IAT -- Spring '16 -- Quest #2 -- 75 points**

On this and all following exams, give neat and complete answers, those that clearly show your understanding of the problem and its solution. In other words, **show all your work**. All problems are five points each. PENCILS and non-graphing calculators only. Decimals are to be rounded to the nearest hundredth.

Evaluate the following:

1)  $\log_4 900 =$

2)  $\log_e 28 =$

Solve the following equations for the indicated variable:

3)  $12^{n-3} + 19 = 46$

4)  $\log_6 (x - 6) + \log_6 (x + 3) = 2$

5)  $8^{4-3a} = 16^{7+a}$

6)  $\log_7 (5t + 4) = 1 + \log_7 (t - 2)$

7)  $-8e^{3-2k} + 16 = -72$

8)  $2 \log_5 7b = 2$

Expand each logarithmic expression completely:

9)  $\log_8 \frac{17a^4}{c^7}$

10)  $\log \sqrt[7]{3km^5}$

Condense and simplify each logarithmic expression into a single logarithm:

11)  $\frac{2\ln v}{3} - \ln w + \frac{\ln y}{4}$

12)  $-0.25 \cdot (56 \log_9 t - 36 \log_9 v)$

Write power functions in the form  $y = ax^b$  for each graph passing thru the given points.

13) (2, -2) and (6, -54)

14) (3, 24.17) and (4, 40.34)

15) For one point apiece, name a place (besides math class) where exponentials and/or logarithms are applied:

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