

# Log Worksheet

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Names \_\_\_\_\_

- I. For problem  $2^{4x+6} = 3^{6x-3}$ , students in the past have done the first step correctly to get:  
 $2^{4x+6} - 3^{6x-3} = 0$  The following students tried solving the problem as shown below

Joe Jock: copied someone else's paper to get:  $\log(2^{4x+6} - 3^{6x-3}) = \log 0$

- a) Is this a legal step? (yes or no) no      b) If no, explain what is wrong with this step:

can not take the log of 0

Pam Pom: half asleep at 5:30 A.M. before practice, did the second step correctly to get  $2^{4x+6} = 3^{6x-3}$  then did a correct third step to get  $\log 2^{4x+6} = \log 3^{6x-3}$  then did a fourth step to get  $\log 2^{4x+6} - \log 3^{6x-3} = 0$

She then tried using the quotient property of logarithms to get  $\frac{2^{4x+6}}{3^{6x-3}} = 0$

- a) Is this a legal step? (yes or no) ) no      b) If no, explain what is wrong with her use of this property:

According to quotient property of logarithms it should be  $\log \frac{2^{4x+6}}{3^{6x-3}} = 0$

Bill & Betty Burnout: across the street, did the first four steps correctly to get  $(4x+6)\log 2 - (6x-3)\log 3 = 0$

Now they tried using the quotient property of logarithms:  $\frac{(4x+6)}{(6x-3)} \log \left(\frac{2}{3}\right) = 0$

- a) Is this a legal step? (yes or no) no      b) If no, explain what is wrong with their use of this property:

see above

- II. Students in the past have taken:  $\log_{0.01}(x-2) + \log x = 1$  and did:

Brent & Brenda Bandgeeks: at band camp, tried using the quotient property of logarithms:  $\frac{\log_{0.01} x}{\log_{0.01} 2} + \log x = 1$

- a) Is this a legal step? (yes or no) no      b) If no, explain what is wrong with their use of this property:

no such property; misapplication of the quotient property of logarithms

Paul & Patty Preps: while admiring each other's Ambercrombie clothes, took  $\log_{0.01}(x-2) + \log x = 1$

and tried using the quotient property of logarithms:  $\log_{0.01}\left(\frac{x}{2}\right) + \log x = 1$

- a) Is this a legal step? (yes or no) no      b) If no, explain what is wrong with their use of this property:

no such property; misapplication of the quotient property of logarithms

Sam & Sally Skater: in the back area, took  $\log_{0.01}(x-2) + \log x = 1$  and did:  $\log_{0.01} x - \log_{0.01} 2 + \log x = 1$

- a) Is this a legal step? (yes or no) no      b) If no, explain what is wrong with their use of this property:

can not distribute a log function