Name_____ Period____ Date_____
Algebra 2: Worksheet A
Chapter 8
2007-2008

Directions: Calculators are not allowed.

1) If the equation $y = (\frac{1}{8})^x$ is graphed, which of the following values of x would produce a point closest to the x-axis?

A) $\frac{1}{8}$ B) $\frac{1}{2}$ C) $\frac{4}{3}$ D) $\frac{5}{2}$

2) If the equation $y = 9^x$ is graphed, which of the following values of x would produce a point closest to the x-axis?

A) $\frac{1}{7}$ B) $\frac{2}{3}$ C) $\frac{5}{4}$ D) $\frac{9}{4}$

3) Express each equation in exponential form.

A) $\log_8 \frac{1}{2} = x$ B) $\log_5 125 = 3$

4) Express each equation in logarithmic form.

A) $8^2 = 64$ B) $c^y = 5$ C) $7^a = y$

5) Expand each logarithm as much as possible.

A) $\log\sqrt[3]{xy}$ B) $\log(8a^5)$ C) $\ln\frac{6b^2}{x}$ D) $\log_3 \frac{x^4}{a^3b^2}$

6) Condense each logarithm as much as possible.

A) $5\log n + \log 8$ B) $\log y - 3\log b$

C) $\log_6 24 - 3\log_6 2 + \log_6 c$ D) $2\ln k + \ln y - 4\ln a$

7) Evaluate each of the following logarithms.

A) $\log_3 27$ B) $\log_5 \frac{1}{25}$ C) $\ln(e^6)$ D) $\ln(e^{-2})$ E) $\log_4 1$

8) Express each logarithm as a quotient of common logarithms.

A) $\log_3 90$ B) $\log_b 25$

9) Simplify each product as much as possible. Do not leave negative exponents in your answer.

A) $\frac{6e^x}{5e^{-3x}} \bullet \frac{e^{5x}}{12}$ B) $\frac{2e^{-4x}}{e^{2x}} \bullet \frac{e^{-x}}{8}$

10) If $\log 2 \approx 0.301$ and $\log 5 \approx 0.699$, what is the approximate value of each logarithm.

A) $\log 10$ B) $\log\frac{2}{5}$ C) $\log 20$

11) If $\log 3 = x$ and $\log 6 = n$, express each logarithm in terms of x and/or n.

A) $\log 2$ B) $\log 18$ C) $\log 12$

12) Solve each equation for x.

A) $7^x = 20$ (Express answer as a quotient of common logarithms.)

B) $4(2^x) - 1 = 23$ (Express answer as a quotient of common logarithms.)

C) $\frac{1}{3}e^x = 10$ (Express answer as a natural logarithm.)

D) $\log_5(x-1) = 2$ (Express answer as a number.)

E) $\log_2(3x+4) = 3$ (Express answer as a number.)

F) $\log_x \frac{1}{100} = -2$ (Express answer as a number.

G) $\log_2 x = -3$ (Express answer as a number.)

H) $\log_6 7 + \log_6 x = 2$ (Express answer as a number.)

I) $\log 4 + \log x = \log 6 + \log 2$ (Express answer as a number.)

J) $\log_2 x - \log_2 5 = 1$ (Express answer as a number.)

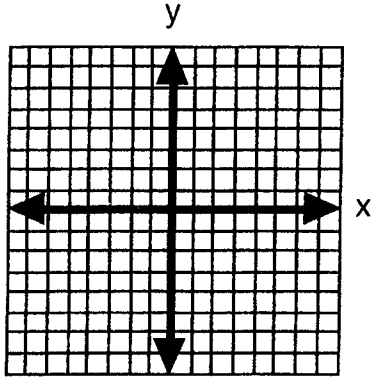
13) Which is the first ***incorrect*** step in each expansion?

A)
Step 1: $\log_4 \frac{4}{16} = \log_4 4 - \log_4 16$
Step 2: $= 1 - \log_4 16$
Step 3: $= 1 - 4$
Step 4: $= -3$

B)
Step 1: $\log \frac{7a^3}{5b^2} = \log 7a^3 - 5b^2$
Step 2: $= \log 7 + \log a^3 - \log 5b^2$
Step 3: $= \log 7 + \log a^3 - \log 5 + \log b^2$
Step 4: $= \log 7 + 3\log a - \log 5 + 2\log b$

14) Sketch a graph of each exponential function. Your graph must have the correct key point, approach the correct asymptote, and have the correct curvature.

A) $f(x) = 4^x$



B) $y = (\frac{1}{5})^x$