

Math 3 Honors Unit 5 Practice Test

- 1- Without using a calculator, evaluate the following logs.
a) $\log_2 32$ b) $\log_7\left(\frac{1}{49}\right)$ c) $\ln e^4$ d) $\log_{11} 11$
- 2- Use a calculator to evaluate the following logs. Round to 3 decimal places.
a) $\log_4 57$ b) $\log 119$ c) $\ln 33$ d) $\log_8\left(\frac{5}{12}\right)$

Graph.

- 3- $y = 4\left(\frac{1}{2}\right)^x - 3$ 4- $y = e^{x+3} - 2$ 5- $y = 2 - 3^{4x}$
6- $y = \log(5x) + 1$ 7- $y = 3 + 2\log_4(x+5)$ 8- $y = -4\ln(x-1)$

Solve. Check for extraneous solutions. Write answers as exact values.

- 9- $4^x \cdot 16^{-x} = \frac{1}{128}$ 10- $(e^x)^3 \cdot e^7 = e^{2x} \cdot \frac{1}{e^4}$ 11- $\log_3(2x+11) = 5$
12- $\log_5 25 = 4x - 7$ 13- $\ln e^{\frac{x}{3}} = 9$ 14- $e^{3x+4} = 23$
15- $\log_3(x^2 - 5x + 15) = 2$ 16- $\log_{12}(x+2) + \log_{12}(x+1) = 1$ 17- $\ln(x+1) - \ln x = 2$
18- $3\log_2(x-1) + \log_2 8 = 18$
- 19- Expand: $\log_2\left(\frac{32x^3}{y^4}\right)$ 20- Condense: $2\ln(x^2 + 4x + 3) - 3\ln(x+1)$

In 21-25, round your answers to 3 decimal places.

- 21- An amplifier's power output P (in watts) is related to its decibel voltage gain d by the formula $P = 25e^{0.1d}$. Find the power output for a decibel voltage gain of 4 decibels.
- 22- A child's grandparents purchase \$10,000 bond fund that matures in 18 years to be used for her college education. The bond fund pays 4% interest compounded semiannually. How much will the bond be worth at maturity?
- 23- The half-life of radioactive cobalt is 5.27 years. If 100 grams of radioactive cobalt is present now, how much will be present in 40 years?
- 24- The Voltage of a certain conductor decreases over time according to the law of uninhibited decay. If the initial voltage is 40 volts and 2 seconds later it is 10 volts, what is the voltage after 5 seconds?
- 25- The logistic growth model $P = \frac{0.8}{1 + 1.67e^{-0.16t}}$ represents the proportion of new cars with a GPS. Let $t = 0$ represent 2003, $t = 1$ represent 2004, and so on. When will 75% of new cars have a GPS?

Solutions to this practice test are found at the following link:

https://drive.google.com/file/d/0B_daxRpQslH_aHpVejY4MVZ5V3M/edit?usp=sharing