Algebra 2 Unit Exam: Sequences, Series, Exponents, Logarithms

Calculators Allowed Section- you may do work on a separate paper and staple, but put answers on test.	
6, 7.5, 9, 10.5, 12…. What is the value of the 123rd term of the sequence?	$\sum_{n=1}^{30} 3x - 1$
5,10,20,40,80…. Write an explicit rule for the sequence An=	$\sum_{n=1}^{\infty} 90(\frac{2}{3})^{n-1}$
A sequence is defined recursively as $a_1=4$ and $a_n=2a_{n-1}$ Find the value of the 6th term	On April first, you will give me a penny. The next day you will give me two cents. The next day, you will give me four cents, then 8, then 16 and so on… How much money will you have given me during the month of April (30 days)? Thank you, very much!
The population of the town of Algeville is currently 1000 people and it grows at a rate of 10% every year. Write an function to determine the population of the town in 8 years. P(t)= P(8)=	Bob invests $5000 in a savings account that gives 3% interest compounded daily. Write an function to determine the amount of money he will have in t years A(t)= Use a graphing calculator or algebra to find out how long it will take him to double his money to the nearest year Time to double ≈ years
Calculate to the nearest thousandth $\log_7 1000$	Solve to the nearest thousandth $5^{x+1} - 2 = 998$
Solve to the nearest thousandth ln(3x-1)=4	Solve for t to the nearest hundredth $3000=1000e^{0.05t}$

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Calculators Not Allowed Section

How much more powerful is an earthquake of magnitude 7 than an earthquake of magnitude 4?

Evaluate

log(100,000,000)

Rewrite as a logarithmic equation

$5^3 = 125$

Rewrite as an exponential equation

$\log_4 \frac{1}{16} = -3$

Evaluate

$\log_3 81$

Evaluate

$\log_2 \frac{1}{16}$

Simplify

$6^{\log_6 36}$

Simplify

$\ln e^7$

Evaluate

log(50) + log(2)

Given

log(2) ≈.301	log(3)≈.477	log(10)=1

Use those facts (and basic arithmetic) to approximate the following values

Evaluate

$\log_3 90 - \log_3 30$

log(6) ≈

log(5) ≈

Solve

$2^{x-3}=32$

log(27) ≈

Solve

$\log_3(2x+1)=3$

Solve

$\log_2 x + \log_2(x-4) = 5$

On separate graph paper, graph the parent function $f(x)=2^x$ and then describe the transformations needed to graph $g(x)=2^{x+2}-4$ and graph it. Label each graph

State the domain and range of g(x) in interval notation

On separate graph paper, regraph $f(x)=2^x$ and then explain how it can be used to help you graph $h(x)=\log_2 x$. Graph h(x). Then graph $j(x)= \log_2(x-3)$

State the domain and range of j(x) in interval notation

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