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| Test 2Dusty Wilson Math 111 No work = no credit  No Symbolic Calculators | | **Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  *Seeing there is nothing that is so troublesome to mathematical practice, nor that doth more molest and hinder calculators, than the multiplications, divisions, square and cubical extractions of great numbers ... I began therefore to consider in my mind by what certain and ready art I might remove those hindrances.*  John Napier (1550 - 1617)  Scottish mathematician | |
| Warm-ups (1 pt each): | =\_\_\_\_\_ | =\_\_\_\_\_ | =\_\_\_\_\_ |

(1 pt) Based upon the quote above, why did Napier invent the logarithm? Answer using complete English sentences.

(4 pts) Solve 

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(2 pts) Is ? Explain

(4 pts) The population of Somalia was 9.36 million in 2010 and growing by 2.2% annually. Set up an exponential model describing the population and use it to algebraically determine the year when the population of Somalia will reach 15 million.

Model: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Year: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4 pts) Write the expression  as a single logarithm.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(2 pts) If  and , find the value of  in terms of *u* and *v*.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

(4 pts) Find the sum of the first 200 terms of the arithmetic sequence 12, 9, 6, …

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(4 pts) Absalom invested $5000 at 7% compounded continuously. What is the value of the investment after 9 years? Answer using a complete sentence.

(4 pts) How much must Saul invest today at 11% compounded semiannually to have $30,000 in 14 years? Answer using a complete sentence.

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| N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= |

(4 pts) Jael saves $4 a day (365 days a year). What interest rate (compounded daily) must she receive to save $8,000 in 4 years? Answer using a complete sentence.

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| N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= |

(4 pts) Abigail borrowed $100,000 at 5%. She paid the loan off after 25 years of monthly payments. How much interest did she pay over the life of the loan? Answer using a complete sentence.

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| N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= |

(4 pts) Ruth invests $100 at the end of each month beginning at the age of 20. After 15 years of contributions, she stops making deposits and just leaves the money in the account. How old will Ruth be when the account is worth $1,000,000 if the invests earn a constant rate of 9%, compounded monthly? Answer using a complete sentence.

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| N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= | N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= |

(4 pts) Nathan borrowed $170,000 at 6% for 30 years. After 5 years of monthly payments, he refinanced the balance at 4% for 20 years. What was total amount Nathan paid over the life of the loans? Answer using a complete sentence.

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| N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= | N=  I%=  PV=  PMT=FV=  P/Y=  C/Y= |

For those interested, remember the BBQ and Movie night on Monday at 5pm☺.