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| Unit 5 | Exponents, Radicals, Logarithms, and Imaginary Numbers Review  |

**Simplify the following expressions.**

1.  2. 

**Write the following in exponential form or radical form.**

3.  4. 

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| 5. | A car is said to depreciate 12% per year. If it was $22,000 new, what will it be worth 6 years later? | 6. | Calcium has a half-life of 21 hours. How much of a 5.6 mg sample will be left after 45 hours?  |

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| 7. | Simeon invested $400 at 3.25% interest compounded monthly. After how many years will his investment triple? | 8. | Taylor invested money into an account at an interest rate of 2.75% compounded continuously. If after 10 years Taylor has $54000 in her account, how much did she originally invest? |

**Solve the following equations (show work). Write in exact simplified form.**

9.  10. 

11.  12. 

**Convert the following.**

13. Change to exponential form: log416 = 2

14. Change to logarithmic form: 35 = 243

**Solve the following equations for x. Show all work.**

15. Log(4x + 6) = 3

16. Log2256 = 3x – 1

17. 35x + 2 = 812x

**Simplify the following.**

18.  19. 

20.  21. 

22.  23. 

**Solve the following equations. Write answers in simplest radical form**

24.  25.  26. 

**The impedance of an element can be represented using the complex number V + Ii, where V is the voltage and I is the element’s current in milliamperes. If two elements are in a circuit in parallel, the total impedance of the two elements is given below. Calculate the total impedance for each pair. Give the answer as a fraction and give the decimal approximate to the nearest 100th.**

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**27.** Element 1: 20 volts, 4 milliamperes 28. Element 1: 25 volts, 3 milliamperes

 Element 2: 30 volts, 2 milliamperes Element 2: 10 volts, 2 milliamperes