**Ch 7 Practice Test** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| **Find the value of each expression. (1 pt. each)****2­0 = \_\_\_ 5-2 = \_\_\_ -92 = \_\_\_** $3^{4}=\\_\\_\\_\\_$ **(-9)2 = \_\_\_** $-\left(\frac{3}{4}\right)^{2}= \\_\\_\\_ $ |

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| **Evaluate each expression for x = 3 and y = -2. Show work underneath each problem. (2 pts each)**$\frac{2x}{y^{3}}= \\_\\_\\_\\_\\_\\_\\_\\_$$\left(3x^{3}y\right)\left(4y\right)= \\_\\_\\_\\_\\_\\_\\_\\_$$\left(2x^{-2}y\right)\left(5y^{-1}\right)=\\_\\_\\_\\_\\_\\_\\_\\_$ |

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| **Write an equivalent expression. Answer should contain only positive exponents. (2 pts)**$\left(-5ab\right)\left(2a^{-3}b^{5}\right)\left(4a^{4}\right)=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$\frac{12yz}{-24y^{5}z}=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$\left(7a^{6}b\right)\left(-5a^{3}b\right)=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$(2c^{5})^{3}=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$\left(\frac{25m^{-3}n}{5m^{3}n^{-4}}\right)=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$$a^{7}a^{-2}a^{-11}=\\_\\_\\_\\_\\_\\_\\_\\_\\_ \left(\frac{x^{5}}{y^{-2}}\right)^{-4}=\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_\\_$ |

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| **Enter an expression equivalent to** $a^{24}$ **in the form,** $\left(a^{n}\right)^{m}$**. (1 pt)****Enter an expression equivalent to** $a^{5}$ **in the form** $a^{-m}a^{n}$**. (1 pt)** |

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| **Select *all* expressions equivalent to** $\left(3^{7}∙3^{-3}\right)^{-1}.$ **(2 pts)**1. $-81$
2. $\frac{1}{81}$
3. $3^{-10}∙3^{6}$
4. $3^{3}∙3^{-7}$
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| **Determine whether each function represents exponential growth or decay. Select the correct option for each function and explain your answer. (1 pt. each)** |
| **Function** | **Growth** | **Decay** | **Explain** |
| $f\left(x\right)=\left(\frac{1}{4}\right)^{x}$  |  |  |  |
| $f\left(x\right)=\left(\frac{5}{6}\right)^{4x}$  |  |  |  |
| $f\left(x\right)=\left(\frac{7}{5}\right)^{4x}$  |  |  |  |
| $f\left(x\right)=\left(\frac{5}{4}\right)^{\frac{x}{10}}$  |  |  |  |
| $f\left(x\right)=3\left(\frac{1}{4}\right)^{^{x}/\_{10}}$  |  |  |  |

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| **Create a table of values and then graph the following equation for a domain of {-2, -1, 0, 1, 2}. Then state whether the function is increasing or decreasing. (5 pts)**$y=\frac{1}{2}^{x}$ |

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| **A fish biologist determines that there are approximately 500 trout in Blue Lake. The population is growing at a rate of 3% each year. How many deer will line in the park after 5 years? (2 pts)** |

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| **Suppose you invest $2,000 in an account that will earn 2.5% compounded quarterly. How much money will be in the account after 5 years? After 12 years?****(3 pts)** |

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| **A population of amoebas in a petri dish will double in size every 30 minutes. At the start of an experiment the population is 50. The function** $f\left(x\right)=50∙2^{x}$**, where x is the number of 30 minute periods, models the population growth. How many ameobas are in the petri dish after 3 hours? (3 pts)** |

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| **Error Analysis: A student evaluated the function** $f\left(x\right)=10∙2^{x}$ **for** $x=-1$ **as shown below**$f\left(-1\right)=10∙2^{-1}$$=20^{-1}$$=-20$**Describe and correct the student’s mistake(s). (2 pts)** |