**Unit 3: Exponential, Power, and Logarithmic Functions Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Hr\_\_\_\_\_**

***rules for exponents***

1 . Rewrite the following expressionswithout using a negative exponent or a decimal point.

a) **5-3**

|  |  |  |  |
| --- | --- | --- | --- |
|  A. $\frac{1}{5^{-3}}$ |  B. $\frac{1}{5^{3}}$ |  C. 53 | D. 15 |

Work/Explanation:

b) **(2x3)0**

 A. 2x3  B. 2x0 C. 2 D. 1

Work/Explanation:

c) **10x3y8**

 **2x5y2**

A. 5x-2y6 B. 5x2y6 C. 50x8y10 D. 5xy

Work/Explanation:

***growth/decay***

2. The car Jason bought is expected to depreciate 18% each year. Jason paid $17,500 for his car. How much would his car be worth one year after he bought it? **SHOW WORK or GIVE AN EXPLANATION.**

A. $3,150

B. $14,350

C. $17,500

D. $20,650

3. The number of bacteria present in a laboratory sample after *x* days can be represented by the equation,

*y = 500 (2)x.* Which of the numbers below tells us how many bacteria were present at the start of the experiment? **SHOW WORK or GIVE AN EXPLANATION.**

A. 2

B. 200

C. 500

D. 1000

E. 2000

***write exponential equations from tables and graphs***

4. Which equation correctly models the relationship given by the table below? **GIVE AN EXPLANATION.**

|  |  |
| --- | --- |
|  *x* |  *y* |
|  **0** |  **1.2** |
|  **1** |  **2.4** |
|  **2** |  **4.8** |
|  **3** |  **9.6** |
|  **4** |  **19.2** |

A. y = 1.2 (1.2)x

B. y = 1.2 (2)x

C. y = 2 (1.2)x

D. y = 2 (2)x

5. Use y = 3(2)x for the following.

1. Complete a table of the function.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | -2 | -1 | 0 | 1 | 2 | 3 |
| Y |  |  |  |  |  |  |

1. What is the y-intercept of the function? Explain.
2. Describe how the y-values are changing as the x values increase.
3. Describe how the rate of change of the y-values is changing as the x-values increase.

6. Use y = 20(0.5)x for the following.

1. Complete a table of the function.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| X | -2 | -1 | 0 | 1 | 2 | 3 |
| Y |  |  |  |  |  |  |

1. What is the y-intercept of the function? Explain.
2. Describe how the y-values are changing as the x values increase.
3. Describe how the rate of change of the y-values is changing as the x-values increase.