Unit 5: Exponential Functions

1. Which of the following expressions is equivalent to $y=5x^{-4}$

**a)** $y=\frac{5}{x^{4}}$ **b)** $y=\frac{4}{x^{5}}$ **c)** $y=5x^{4}$ **d)** $ y=\frac{1}{5x^{4}}$

1. Simplify the expression $x^{3}x^{5}$

**a)** $x^{2}$ **b)** $x^{8}$ **c)** $x^{15}$ **d)** $x^{35}$

1. Simplify the expression $\frac{3^{8}}{3^{4}}$

**a)** $3^{4}$ **b)** $3^{2}$ **c)** $1^{2}$ **d)** $1^{4} $

1. $\left(2a\right)^{3}= ?$

**a)** $2a^{3}$ **b)** $5a^{3}$ **c)** $6a^{3}$ **d)** $8a^{3}$

1. Simplify $\sqrt{50}$

**a)** $2\sqrt{5}$

**b)** $5\sqrt{2}$

**c)** $25\sqrt{2}$

**d)** $2\sqrt{25}$

1. If a > 0, the graph for equation
y = a(0.87)x will depict:

**a)** exponential growth

**b)** linear decay

**c)** linear growth

 **d)** parabolic decay

 **e)** exponential decay

1. If b > 0, the graph for equation
y = b(3x) will depict:

**a)** exponential growth

**b)** linear decay

**c)** linear growth

 **d)** parabolic decay

 **e)** exponential decay

**Use for #8-10: The rule**$y=15,000(0.88^{x})$ **gives the value (in dollars) of a car that is x years old.**

1. What question can be answered by solving the equation $10,000=15,000(0.88^{x})$?

**a)** What will be the value of the car after 10,000 years?

**b)** When will the value of the car equal $10,000?

**c)** When will the value of the car be less than $10,000?

**d)** When will the value of the car be greater than $10,000?

**e)** None of the above

1. Which of the following statements describe how the value of the car changes from one year to the next?

*As time passes, the value of the car …*

 **a)** increases at a slow rate

 **b)** remains the same

 **c)** increases at a constant rate

 **d)** decreases at a rapid rate

 **e)** decreases at a constant rate

1. Evaluate $y=15,000(0.88^{15})$. Round to the nearest dollar.

**a)** $198,000

**b)** $28,200

**c)** $7,916

**d)** $2,205

**e)** $1,163

Does the graph show an exponential growth or a linear growth?

|  |  |  |
| --- | --- | --- |
| 1. https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcSHwDB0ZoYnvho_pqSD12rJUASnL6rLyHsOjmItRw6i-QzJJWRM\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | 1. https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcRQELVuA4dDzdV2oY3hy_a1SWrX3Kzdc65kUDJUWFcQj2ZP_AxO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | 1. https://encrypted-tbn1.gstatic.com/images?q=tbn:ANd9GcTqQcFyuNCLV3VM8lRvmblO_GMqD1uGYK5o-kwbasbbfFXTcqxD\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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Do the tables show an exponential growth or a linear growth?

|  |  |  |
| --- | --- | --- |
| 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 | 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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1. In the table below:
2. What is the y intercept? b. What is the growth factor?
3. What equation fits this data? d. Graph the data on a coordinate plane.

|  |  |
| --- | --- |
| **X** | **Y** |
| 0 | 1 |
| 1 | 4 |
| 2 | 16 |
| 3 | 64 |
| 4 | 256 |

1. If you invest $750 at a yearly interest rate of 7%:
2. What is the growth factor?
3. How much money will you have after 6 years?
4. If you invest $50 at a yearly interest rate of 3%:
5. What is the growth factor?
6. How much money will you have after 10 years?

Evaluate.

1. (-10)2=
2. $\left(-2\right)^{3}$=
3. $\left(-2\right)^{5}=$
4. $\left(-3\right)^{2}=$
5. You have a bag of 500 pieces of candy and you eat a third of the pieces a day.
6. Create a table showing the candy remaining for days 0-8.
7. What is the y-intercept?
8. What is the decay factor?
9. What equation matches this situation?
10. You have another bag of candy with 700 pieces and you eat a fourth of the pieces a day.
11. Create a table showing the candy remaining for days 0-8.
12. What is the y-intercept?
13. What is the decay factor?
14. What equation matches this situatio