**Exponential Functions and Rational Exponents**

1. The function f(x) = 2(2)x was replaced with f(x) + k, resulting in the graph below. What is the value of k?
2. Write as a radical expression: $(64x^{2}y^{3})^{\frac{-1}{2}}$
3. 8xy3/2  b.$\frac{8}{xy^{\frac{3}{2}} }$ c. $\frac{1}{8xy^{\frac{3}{2}}}$ d. $4xy^{3}$
4. Which of the following is **not true** regarding the function y = 2x:
5. The function is an exponential function
6. The function has a domain of all real numbers
7. As the value of x gets very large the value of y gets close to zero
8. As the value of x increases by one the value double
9. If a student deposits $1500 in the bank and earns an annual interest rate of 8% how much will he have after 15 years?
10. Which of the following is true for y = .5(3) x :
11. The function shows exponential growth.
12. The function shows exponential decay.
13. The function is a linear function.
14. The y intercept is 3.
15. The population of Barnardsville in 2014 was estimated to be 24,000 people with an annual rate of increase (growth) of about 2.4%. Which function would give you the estimated total population, y, of Barnardsville in 2021?

[A] y = 24000 (1 + 2.4)7 [C] y = 24000 (1 + .024)7

[B] y = 24000 (1+ 2.4)21  [D] y = 24000 (1 + .24)21

7. Matt bought a new car at a cost of $28,000.  The car depreciates approximately 15% of its value each year. Which function would give you the estimated value of the car, y, after t years?

[A] y = 28000 (.15)t [B] y = 28000 (1.15)t [C] y = 28000 (.85)t  [D] y = 28000 (1.015)t

8. Kelly plans to put her graduation money into an account and leave it there for 4 years while she goes to college. She receives $900 in graduation money that she puts into an account earning 4.25% interest annually. How much will be in Kelly’s account at the end of four years?

[A] $1,052.87 [B] $1,063.03 [C] $3,711.09 [D] $293,628.5

9. Maggie recorded the population for two different cities in North Carolina. The results are shown in the table below

|  |  |  |
| --- | --- | --- |
| Time(years) | City 1, NC | City 2, NC |
| 2008 | 950 | 150 |
| 2010 | 1,248 | 299 |
| 2012 | 1,551 | 598 |
| 2014 | 1,862 | 1196 |

 Which statement best describes her data?

[A] Both cities’ population changed at a constant rate.

[B] Both cities’ population changed at an exponential rate.

[C] City 1 increased its population at a constant rate, and City 2 increased its population at an exponential rate.

[D] City 1 increased its population at an exponential rate, and City 2 increased its population .

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