|  |  |  |  |
| --- | --- | --- | --- |
| **What you need to know and be able to do** | **Things to remember** | **Problem** | **Problem** |
| **Describe Characteristics of Exponential Functions** | * *Interval of Inc/Dec* * *Domain* * *Range* * *Asymptote* * *B \_\_\_\_ 1* * *Growth/Decay* * *X-int* * *Y-int* * *End behaviors* * *Rate of Change* | 1. | Domain:  Range:  Asymptote:  X-int: Y-int:  Int. of Increase or Decrease  B \_\_\_\_ 1  Growth or Decay  End Behaviors:  Rate of Change from  0 < x < 2 |
| 2. | Domain:  Range:  Asymptote:  X-int: Y-int:  Int. of Increase or Decrease  B \_\_\_\_ 1  Growth or Decay  End Behaviors:  Rate of Change from  -2 < x < 0 |
| **Identify Transformations of Exponential Functions** | * *Describe the transformations on the parent function y = 2x* | 3. | 4. |
| * *Write the equation for the function y = 3x with given transformations* | 5. Vertically compress by a factor of 1/3, shift left 3, and shift down 8 | 6. Reflect across the x-axis, vertically stretch by a factor 5, and shift up 7 |
| **Graph Exponential Functions** | * *Use -2, -1, 0, 1, 2 for the x-values* * *Graph the asymptote* | 7.   |  |  | | --- | --- | | x | f(x) | |  |  | |  |  | |  |  | |  |  | |  |  | |  |
| 8.   |  |  | | --- | --- | | x | f(x) | |  |  | |  |  | |  |  | |  |  | |  |  | |  |
| **Comparing exponential characteristics** | * *Compare y-intercepts* * *Compare rates of change* | ***Use the graphs from Problems 7 and 8*** | |
| 9. Which function has a greater rate of change from 0 < x < 2? Why? | 10. Which function has a lower y-intercept? Why? |
| **Solve Exponential Functions** | * *Isolate the base* * *Create like bases* | 11. | 12. |
| 13. | 14. |
| **Create and Use Exponential Functions from word problems and tables** | * *Find your initial value ‘a’ (x = 0)* * *Calculate your rate ‘b’* * *If there are percentages, it is either (1 +r) or (1 – r)* | 15. The population of Marietta in 2003 was estimated to be 35,000 people with a rate of increase of about 24%.   1. Write an equation to represent the population of Marietta. 2. Use your equation to estimate the population in 2015 to the nearest hundred people. | 16. A certain bacteria that is growing on your kitchen counter doubles every 5 minutes. Assuming that there was only 1 bacteria in the beginning, how many bacteria would there be after 2 hours? |
| 17. Chyna invests $300 at a bank that offers a rate of 5% compounded quarterly.   1. Write an equation to model the amount of money in Chyna’s bank account. 2. How much money will Chyna have in 4 years? | 18. Caleb bought a new car at a cost of $25,000. The value of the car decreases about 25% every 2 years.   1. How much will his car be worth about 2 years? 2. How much will his car be worth after 10 years? |
| 19. Tina and her friends are having a party. The amount of people that know about the party throughout the week is shown in the table below.   |  |  | | --- | --- | | Number of Days | Number of People | | 0 | 6 | | 1 | 18 | | 2 | 54 | | 3 | 162 | | 1. Write the equation of the amount of people that know about the party. 2. How many people will know about the party in a week? |
| **Create and Use Geometric Sequences** | * *Recursive Rule:* * *Explicit/Closed Rule:* | 20. Given the sequence below:  152, 76, 38, …   1. Use the recursive rule to find the 5th term 2. Create the closed formula for the sequence. 3. Use the explicit formula to find the 8h term | 21. Given     1. Find the first 5 terms of the sequence. 2. Create the explicit formula. 3. Calculate the 8th and 10th terms. |
| **Compare Exponential functions in different forms** | * *Find the characteristics of each function in its own form. Use those characteristics to compare* * *Y-intercepts occur where x = 0* * *Rate of change requires 2 points to plug into the slope formula* * *Greater rate of change is the magnitude of the number, not the sign* | **F(x) is represented by the graph below**    **G(x) is represented by the equation** | What is the y-intercept of f(x)?  What is the y-intercept of g(x)?  Which function has a lower y-intercept?  What is the rate of change of f(x) for 0 ≤ x ≤ 3?  What is the rate of change for G(x) for 0 ≤ x ≤ 3?  Which function has the greater rate of increase for 0 ≤ x ≤ 3? |