**Practice Test Unit 8**

**Multiple Choice**

*Identify the choice that best completes the statement or answers the question.*

\_\_\_\_ 1. Order the group of quadratic functions from widest to narrowest graph.

, , 

|  |  |  |  |
| --- | --- | --- | --- |
| a. | , ,  | c. | , ,  |
| b. | , ,  | d. | , ,  |

*Solve the problem of exponential growth or decay.*

\_\_\_\_ 2. Pepsi brand’s value increased by 5.75% from 2002 to 2003. Assume this continues. If the company had a value of $11,140,000 in 2002, write an equation for the value of Pepsi for *t* years after 2002.

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 3. The estimated population of Egypt in 2003 is 75 million. This is a 1.9% growth rate over the previous year. Assuming this continued what would the population be in 2009?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 79 million | c. | 87 million |
| b. | 82 million | d. | 84 million |

\_\_\_\_ 4. Nintendo brand’s value decreased by 11.2% from 2002 to 2003. Assume this continues. If the company had a value of $9,220,000 in 2002, write an equation for the value of Nintendo for *t* years after 2002.

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. |  |

\_\_\_\_ 5. The table shows the estimated number of deer living in a forest over a five-year period. Are the data best represented by a linear, exponential, or quadratic model? Write an equation to model the data.

|  |  |
| --- | --- |
| Year | Estimated Population |
| 0 | 81 |
| 1 | 63 |
| 2 | 49 |
| 3 | 38 |
| 4 | 30 |
| a. | quadratic;  | c. | exponential;  |
| b. | quadratic;  | d. | linear;  |

\_\_\_\_ 6. Which kind of function best models the data in the table? Graph the data and write an equation to model the data.

|  |  |
| --- | --- |
| *x* | *y* |
| 0 | –2 |
| 1 | –3.5 |
| 2 | –5 |
| 3 | –6.5 |
| 4 | –8 |
| a. | linear; *y* = 1.5*x* – 2 | c. | exponential; *y* = –1.5*x* – 2 |
| b. | linear; *y* = –1.5*x* – 2 | d. | quadratic; *y* = 1.5*x2* – 2 |

*Graph the function. State the y-intercept.*

\_\_\_\_ 7. 

|  |  |  |  |
| --- | --- | --- | --- |
| a. | *y*-intercept = 1 | c. | *y*-intercept = 3 |
| b. | *y*-intercept = 1 | d. | *y*-intercept = 2 |

*Determine whether the data in the table display exponential behavior. Explain why or why not.*

\_\_\_\_ 8.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***x*** | 3 | 6 | 9 | 12 |
| ***y*** | 1 | 2 | 4 | 8 |

|  |  |
| --- | --- |
| a. | No; the domain values are at regular intervals. |
| b. | No; a different value is added to each range value. |
| c. | No; there is no relationship between the *x* value and its corresponding *y* value. |
| d. | Yes; the domain values are at regular intervals and the range values have a common factor 2. |

\_\_\_\_ 9.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ***x*** | 3 | 2 | 1 | –1 |
| ***y*** | 8 | 2 | 0.5 | 0.125 |

|  |  |
| --- | --- |
| a. | No; the domain values are at regular intervals and the range values have a common factor 0.25. |
| b. | No; the domain values are not at regular intervals although the range values have a common factor. |
| c. | Yes; the domain values are at regular intervals and the range values have a common factor 4. |
| d. | Yes; the domain values are at regular intervals and the range values have a common factor 0.25. |

\_\_\_\_ 10. Find the midpoint of **



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | (2, 0) | b. | (2, 1) | c. | (1, 1) | d. | (1, 0) |

\_\_\_\_ 11. Find the coordinates of the midpoint of the segment whose endpoints are *H*(8, 2) and *K*(6, 10).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | (7, 6) | b. | (1, 4) | c. | (14, 12) | d. | (2, 8) |

\_\_\_ 12. *M* is the midpoint of  for the points *C*(3, 4) and *F*(9, 8). Find *MF*.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. |  | b. |  | c. | 26 | d. | 13 |

\_\_\_\_ 13. The Frostburg-Truth bus travels from Frostburg Mall through the city’s center to Sojourner Truth Park. The mall is 3 miles east and 5 miles north of the city’s center. Truth Park is 3 miles west and 4 miles south of the city’s center. How far is it from Truth Park to the mall to the nearest tenth of a mile?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | 1 miles | b. | 5 miles | c. | 5.8 miles | d. | 10.8 miles |

**What is the slope of the line that passes through the pair of points?**

\_\_\_\_ 14. (1, 7), (10, 1)

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. |  | b. |  | c. |  | d. |  |

**For the data in the table, does *y* vary directly with *x*? If it does, write an equation for the direct variation.**

\_\_\_\_ 15.

|  |  |
| --- | --- |
| ***x*** | ***y*** |
| 16 | 4 |
| 32 | 16 |
| 48 | 36 |
| a. | yes; *y* = 2*x* | c. | yes; *y* = 8*x* |
| b. | yes; *y* = 4*x* | d. | no; *y* does not vary directly with *x* |

**What are the slope and *y*-intercept of the graph of the given equation?**

\_\_\_\_ 16. *y* = –9*x* + 2

|  |  |
| --- | --- |
| a. | The slope is 9 and the *y*-intercept is –2. |
| b. | The slope is –9 and the *y*-intercept is 2. |
| c. | The slope is –2 and the *y*-intercept is –9. |
| d. | The slope is 2 and the *y*-intercept is –9. |

**Write an equation in point-slope form for the line through the given point with the given slope.**

\_\_\_\_ 17. (–10, –6); *m* = 

|  |  |  |  |
| --- | --- | --- | --- |
| a. | *y* – 6 = (*x* – 10) | c. | *y* + 6 = (*x* + 10) |
| b. | *y* – 6 = (*x* + 10) | d. | *y* + 10 = (*x* + 6) |

**What is the solution of the system? Use substitution.**

\_\_\_\_ 18. 



|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | (–4, –21) | b. | (2, 3) | c. | (–2, –12) | d. | (2, –3) |

**What is the simplified form of each expression?**

\_\_\_\_ 19. 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | 1 | b. | 0 | c. | –5.1 | d. | –1 |

\_\_\_\_ 20. Suppose a population of 160 crickets doubles in size every month. The function  gives the population after *x* months. How many crickets will there be after 2 years?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 2,684,354,560 crickets | c. | 7,680 crickets |
| b. | 640 crickets | d. | 640 crickets |

\_\_\_\_ 21. Suppose that the population of deer in a state is 19,900 and is growing 3% each year. Predict the population after 10 years.

|  |  |
| --- | --- |
| a. | about 274,338 deer |
| b. | about 26,744 deer |
| c. | about 597,000 deer |
| d. | about 1,175,075,100 deer |

\_\_\_\_ 22. A boat costs $11,850 and decreases in value by 10% per year. How much will the boat be worth after 8 years?

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | $5,101.04 | b. | $11,770.00 | c. | $4,590.93 | d. |  $25,401.53 |

\_\_\_\_ 23. How is the graph of *y* = –2*x*2 – 5 different from the graph of *y* = –2*x*2?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | It is shifted 5 unit(s) up.  | c. | It is shifted 5 unit(s) left. |
| b. | It is shifted 5 unit(s) down.  | d. | It is shifted 5 unit(s) right. |

\_\_\_\_ 24. If an object is dropped from a height of 144 feet, the function  gives the height of the object after *t* seconds. When will the object hit the ground?

|  |  |  |  |
| --- | --- | --- | --- |
| a. | 1.5 s | c. | 6 s |
| b. | 3 s | d. | 9 s |

**What are the solutions of the equation?**

\_\_\_\_ 25. 

|  |  |  |  |
| --- | --- | --- | --- |
| a. | , –2 | c. | 3, –2 |
| b. | , 2 | d. | 3, 2 |

\_\_\_\_ 26. 

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | 3, –6 | b. | –3, 6 | c. | 4.42, –4.42 | d. | 18.75, –21.75 |

**Is the histogram *uniform*, *symmetric*, or *skewed*?**

\_\_\_\_ 27. 

|  |  |
| --- | --- |
| a. | uniform |
| b. | symmetric |
| c. | skewed |

**What is the simplest form of the expression?**

\_\_\_\_ 28. 

|  |  |  |  |
| --- | --- | --- | --- |
| a. |  | c. |  |
| b. |  | d. | none of these |

**Is the sequence geometric? If so, identify the common rule.**

\_\_\_\_ 29. 2, –4, –16, –36, ...

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | yes; –2 | b. | yes; 2 | c. | yes; –3 | d. | no |

\_\_\_\_ 30. 5, –25, –100, –225, ...

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| a. | yes; –5 | b. | yes; –4 | c. | yes; 5 | d. | no |