|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1. The graphs of *f*(*x*) and *g*(*x*) are given. For what values of *x* is *f*(*x*) = *g*(*x*)?​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 2, 3 |
|   | b.  | 0 |
|   | c.  | –1 |
|   | d.  | –2, 5 |
|   | e.  | –2, 10 |

|  |  |
| --- | --- |
| *ANSWER:* | e |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2. Which of the following functions is neither even nor odd?​

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

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 3. If the point  is on the graph of an even function, what other point must also be on the graph?​

|  |  |  |
| --- | --- | --- |
|   | a.  |  |
|   | b.  |  |
|   | c.  | (0, 0) |
|   | d.  |  |
|   | e.  | None of these |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 4. If , evaluate the difference quotient .​

|  |  |  |
| --- | --- | --- |
|   | a.  | 2*a* + *h* – 8 |
|   | b.  | 2*a* – 8 |
|   | c.  | 2*a* – *h* – 8 |
|   | d.  | *h* |
|   | e.  | none of these |

|  |  |
| --- | --- |
| *ANSWER:* | e |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 5. A box with an open top is to be constructed from a rectangular piece of card board with dimensions *b* = 6 in. by *a* = 25 in. by cutting out equal squares of side *x* at each corner and then folding up the sides as in the figure.​Express the volume *V* of the box as a function of *x.*​​

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

|  |  |
| --- | --- |
| *ANSWER:* | e |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 6. Find an expression for the function *y* = *f*(*x*) whose graph is the bottom half of the parabola.​

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

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 7. A rectangle has perimeter 14 m. Express the area of the rectangle as a function *A*(*l*) of the length *l* of one of its sides.​

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

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 8. If , find and simplify , where *h* ≠ 0.​

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

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 9. Find the domain of the function.​​

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

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 10. Find the domain and sketch the graph of the function. What is its range?​​

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | ***D***: (–∞, ∞); ***R***: [–2, ∞) | b.  | ***D***: (–∞, ∞); ***R***: (–∞, 0]  |
|   | c.  | ***D***: (–∞, ∞); ***R***: [0, ∞) | d.  | ***D***: (–∞, ∞); ***R***: (–∞, ∞) |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 11. Determine whether the function whose graph is given is even, odd, or neither.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | Even |
|   | b.  | Neither |
|   | c.  | Odd |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 12. Find the domain of the function ​

|  |  |  |
| --- | --- | --- |
|   | a.  | (–∞, ∞) |
|   | b.  | [, ∞) |
|   | c.  |  |
|   | d.  |  |

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 13. Sandy wishes to have a rectangular garden in her backyard. She has 50 ft of fencing with which to enclose her garden. Letting *x* denote the width of the garden, find a function *f* in the variable *x* that gives the area of the garden.                             ​

|  |  |  |
| --- | --- | --- |
|   | a.  | *f*(*x*) = 50*x* – *x*2, 0 < *x* < 25 |
|   | b.  | *f*(*x*) = 25*x* – *x*2, 0 < *x* < 25 |
|   | c.  | *f*(*x*) = 50*x* – *x*2, 0 < *x* < 50 |
|   | d.  | *f*(*x*) = 25*x* – *x*2, 0 < *x* < 50 |

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 14. The graph of the function *f*is given. State the value of *f*(2.7).​​

|  |  |  |
| --- | --- | --- |
|   | a.  | *f*(2.7) = –40 |
|   | b.  | *f*(2.7) = –10 |
|   | c.  | *f*(2.7) = 40 |
|   | d.  | *f*(2.7) = 0 |
|   | e.  | *f*(2.7) = 10 |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 15. The graph shown gives the weight of a certain person as a function of age. Find the age at which the person stopped an exercise program.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | 20 |
|   | b.  | 54 |
|   | c.  | 38 |
|   | d.  | 35 |
|   | e.  | 70 |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 16. In the function , what must be the value *d,* if *f*(3) = 1?​

|  |  |  |
| --- | --- | --- |
|   | a.  | *d* = 25 |
|   | b.  | *d*= 23 |
|   | c.  | *d*= –23 |
|   | d.  | *d*= –1  |
|   | e.  | *d*= –25 |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 17. An open rectangular box with volume 4 m3 has a square base. Express the surface area of the box as a function *S*(*x*) of the length *x* of a side of the base.​

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

|  |  |
| --- | --- |
| *ANSWER:* | b |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 18. What is the equation of this graph?​​

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

|  |  |
| --- | --- |
| *ANSWER:* | e |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 19. Find *a*, such that the function  has the domain .​

|  |  |  |
| --- | --- | --- |
|   | a.  | *a* = –9 |
|   | b.  | *a* =  |
|   | c.  | *a* = – |
|   | d.  | *a* = 9 |
|   | e.  | *a* = 3 |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 20. Determine whether *f*is even, odd, or neither.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | neither |
|   | b.  | odd |
|   | c.  | even |

|  |  |
| --- | --- |
| *ANSWER:* | c |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 21. Find the domain.​​

|  |  |  |
| --- | --- | --- |
|   | a.  | (0, 3) |
|   | b.  | (–∞, 0] |
|   | c.  | (–3, ∞] |
|   | d.  | [0, 3] |
|   | e.  | [0, ∞) |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 22. Find the range of the function.​*y* = 4 + cos *x*​

|  |  |  |
| --- | --- | --- |
|   | a.  | (–∞, ∞) |
|   | b.  | ​(2, ∞) |
|   | c.  | ​[–1, 1] |
|   | d.  | ​(–1, 3) |
|   | e.  | ​[3, 5] |

|  |  |
| --- | --- |
| *ANSWER:* | e |

 |

|  |  |  |
| --- | --- | --- |
| 23. Find the domain of the function.​

|  |  |
| --- | --- |
| *ANSWER:* | ​​​ |

 |

|  |  |  |
| --- | --- | --- |
| 24. Determine whether  *f*is even, odd, or neither.​

|  |  |
| --- | --- |
| *ANSWER:* | even |

 |

|  |  |  |
| --- | --- | --- |
| 25. Find the domain of the function.​

|  |  |
| --- | --- |
| *ANSWER:* | [–5, 5] |

 |

|  |  |  |
| --- | --- | --- |
| 26. Find the range of the function.​

|  |  |
| --- | --- |
| *ANSWER:* | 0 ≤ *​h*​(*​x*​) ≤ 6 |

 |

|  |  |  |
| --- | --- | --- |
| 27. The graphs of *f*(*x*) and *g*(*x*) are given.a) For what values of *x* is *f*(*x*) = *g*(*x*)?b) Find the values of *f*(–1) and *g*(12).​​

|  |  |
| --- | --- |
| *ANSWER:* | a) 2, 6 b) ​​​​ |

 |

|  |  |  |
| --- | --- | --- |
| 28. A spherical balloon with radius *r* inches has volume .Find a function that represents the amount of air required to inflate the balloon from a radius of *r* inches to a radius of *r* + 7 inches.​

|  |  |
| --- | --- |
| *ANSWER:* | ​​​​​​​ |

 |

|  |  |  |
| --- | --- | --- |
| 29. If ​find  *f* (–3),  *f* (0), and *f* (4).

|  |  |
| --- | --- |
| *ANSWER:* | *f* (–3) = 16,  *f* (0) = 7,  *f* (4) = 2. |

 |

|  |  |  |
| --- | --- | --- |
| 30. Refer to the graph of the function  *f* in the following figure.​​**a.** Find *f* (0).**b.** Find the value of *x* for which (i) *f*(*x*) = 1 and (ii)  *f*(*x*) = 0.**c.** Find the domain and range of *f*.​​​

|  |  |
| --- | --- |
| *ANSWER:* | **a.** 0**b.** (**i**) 1 (**ii**) 0, 2**c.** ***D***: [0, 3], ***R***: [–3, 1] |

 |

|  |  |  |
| --- | --- | --- |
| 31. Determine whether the function is even, odd, or neither.​​

|  |  |
| --- | --- |
| *ANSWER:* | Neither |

 |

|  |  |  |
| --- | --- | --- |
| 32. The following figure shows a portion of the graph of a function  *f* defined on the interval [–1, 1]. Sketch the complete graph of  *f* if it is known  *f* is odd.​

|  |  |
| --- | --- |
| *ANSWER:* |  |

 |

|  |  |  |
| --- | --- | --- |
| 33. By cutting away identical squares from each corner of a rectangular piece of cardboard and folding up the resulting flaps, an open box can be made. If the cardboard is 18 in. long and 9 in. wide and the square cutaways have dimensions of *x* in. by *x* in., find a function that gives the volume of the resulting box.​

|  |  |
| --- | --- |
| *ANSWER:* |  |

 |

|  |  |  |
| --- | --- | --- |
| 34. Use the vertical line test to determine whether the curve is the graph of a function of *x*.​

|  |  |
| --- | --- |
| *ANSWER:* | Yes |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 35. Find the domain and sketch the graph of the function. What is its range?​​

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|   | a.  | ***D***: (–∞, ∞); ***R***: [–1, ∞) | b.  | ***D***: (–∞, ∞); ***R***: (–∞, 0]  |
|   | c.  | ***D***: (–∞, ∞); ***R***: [0, ∞) | d.  | ***D***: (–∞, ∞); ***R***: (–∞, ∞) |

|  |  |
| --- | --- |
| *ANSWER:* | d |

 |

|  |  |  |
| --- | --- | --- |
| 36. Sketch the graph of the function.​

|  |  |
| --- | --- |
| *ANSWER:* |  |

 |

|  |  |  |
| --- | --- | --- |
| 37. The graph of a function *g* is given. On what interval(s) is *g* increasing?

|  |  |
| --- | --- |
| *ANSWER:* |  |

 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 38. Determine whether the statement is true or false. If  and *f* is a decreasing function, then .

|  |  |  |
| --- | --- | --- |
|   | a.  | True |
|   | b.  | False |

|  |  |
| --- | --- |
| *ANSWER:* | False |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 39. Let  *f* be the function whose graph is given. Find the interval where the function is decreasing.

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

|  |  |
| --- | --- |
| *ANSWER:* | a |

 |