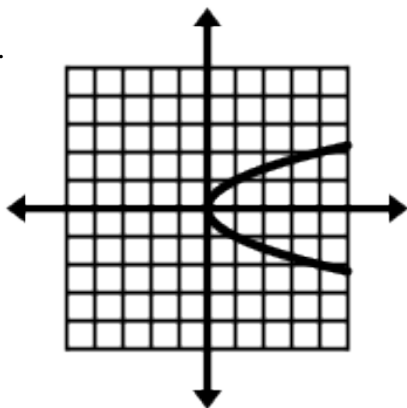
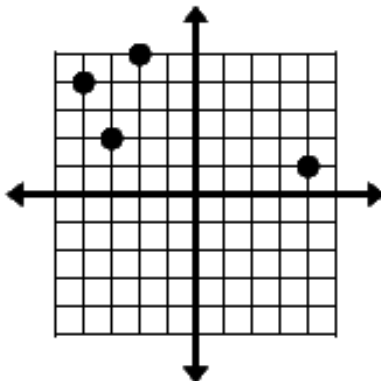


#1-6: Determine if each of the following is a function. If no, explain.

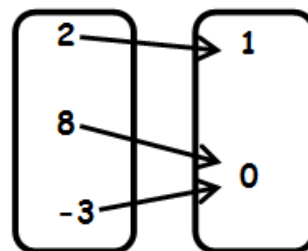
1.



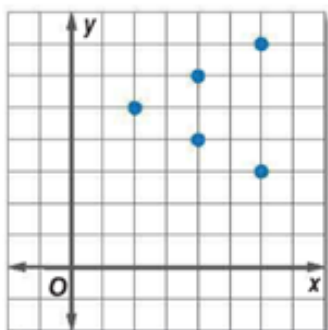
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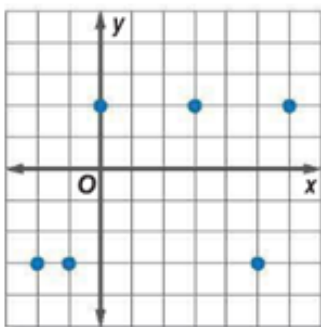
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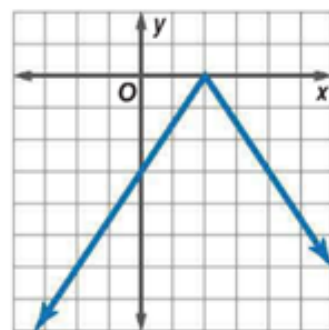
4.



5.

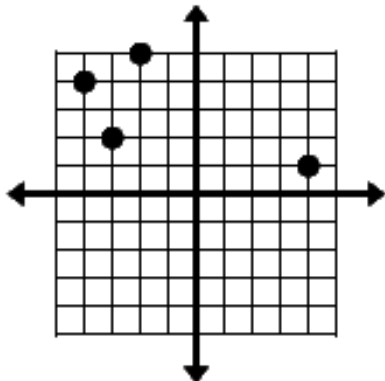


6.

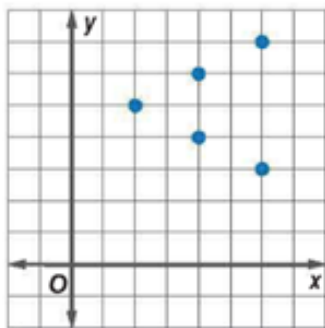


#7-9: Determine the domain and range for each of the following.

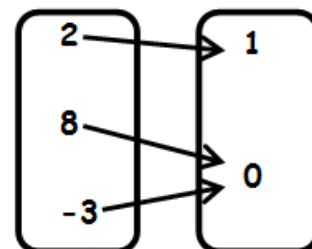
7.



8.



9.



**10. Mark if each of the following is true or false about the domain of functions.**

- \_\_\_\_\_ It is the set of all dependent values.
- \_\_\_\_\_ It is the set of all independent values.
- \_\_\_\_\_ It is the input values.
- \_\_\_\_\_ It is the output values.
- \_\_\_\_\_ It is always smaller than the range.
- \_\_\_\_\_ It is always bigger than the range.
- \_\_\_\_\_ It never has a repeating number in it.

**12. Create a mapping for #7.**

**11. Mark if each of the following is true or false about the range of functions.**

- \_\_\_\_\_ It is the set of all dependent values.
- \_\_\_\_\_ It is the set of all independent values.
- \_\_\_\_\_ It is the input values.
- \_\_\_\_\_ It is the output values.
- \_\_\_\_\_ It is always smaller than the domain.
- \_\_\_\_\_ It is always bigger than the domain.
- \_\_\_\_\_ It never has a repeating number in it.

**13. Create a mapping for #8.**

**14. Create a mapping for  $\{(4,5), (3,-2), (-2,5), (4,7)\}$  and determine if it is a function.**

**15. Evaluate  $r(x) = 2x - 1$  given the inputs  $\{-3, -1, 1, 3\}$ .**

**16. Evaluate  $f(x) = x^2 + 3$  given the inputs  $\{-2, 0, 1, 2\}$ .**

**17. If  $f(x) = 4^x + 10$ , what is  $f(0)$ ?**

**18. If  $g(x) = 5x^3 + 2$ , what is  $g(1.5)$ ?**

**#19-30: Let  $f(x) = 2x$ ,  $g(x) = 4x + 20$ ,  $k(x) = 18$ ,  $j(x) = 16x + 12$  and  $h(x) = 12x$**

**19.**  $(f + h)(x) =$

**20.**  $\left(\frac{g}{f}\right)(x) =$

**21.**  $-2[h(x)] =$

**22.**  $3[(f + j)(x)] - 6 =$

**23.**  $(f - g)(x) =$

**24.**  $(f \cdot g)(x) =$

**25.**  $(j - g)(x) =$

**26.**  $(g - f)(x) =$

**27.**  $\left(\frac{k}{f}\right)(x) =$

**28.**  $\left(\frac{j}{g}\right)(x) =$

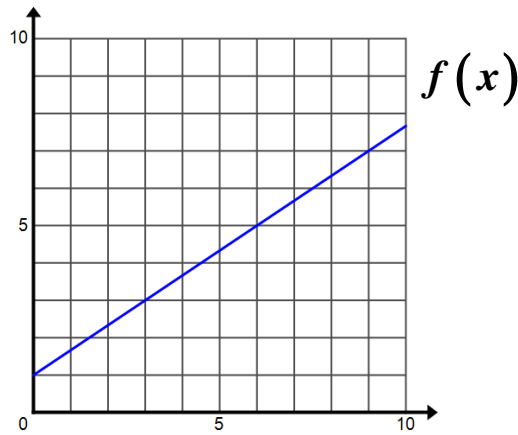
**29.**  $\left(\frac{g}{h}\right)(x) =$

**30.**  $\left(\frac{h}{k}\right)(x) =$

31. The function  $f(t) = 500(1.05)^t$  estimates the number of computers (in thousands) in America after the year 2000, where  $t$  is the number of years since 2000. If  $f(14) = 990$ , fill in the blanks below.

After \_\_\_\_\_, there are \_\_\_\_\_.

#32-35: The following graph and table are models of the same function. Use them to answer the following.



| $x$ | $y$            |
|-----|----------------|
| 1   | $\frac{5}{3}$  |
| 2   | $\frac{7}{3}$  |
| 4   | $\frac{11}{3}$ |
| 5   | $\frac{13}{3}$ |
| 7   | $\frac{17}{3}$ |
| 8   | $\frac{19}{3}$ |
| 10  | $\frac{23}{3}$ |

32.  $f(2) =$

33.  $f(3) =$

34.  $f(7) =$

35.  $f(12) =$

36. For the table of  $g(x)$  find  $g(4)$ .

| $x$ | $g(x)$ |
|-----|--------|
| 1   | -4     |
| 2   | -2     |
| 3   | 0      |
| 4   | 2      |
| 5   | 4      |
| 6   | 6      |
| 7   | 8      |

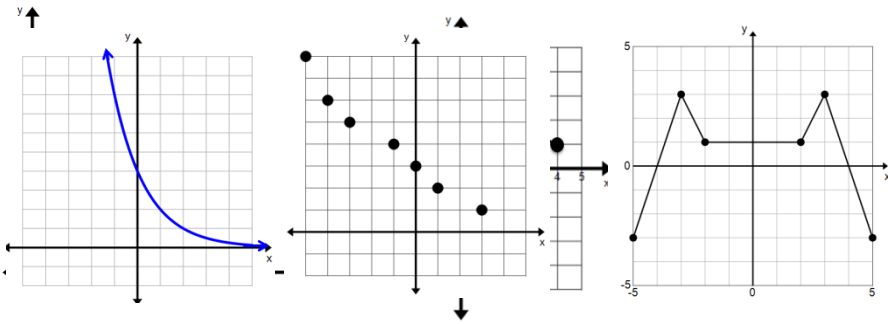
37. For the table of  $g(x)$  find  $g(2)$ .

38. Which statement below is true about this table?

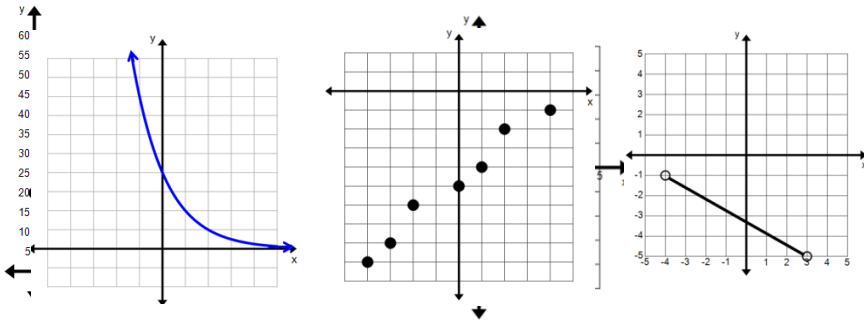
| X  | Y |
|----|---|
| -3 | 5 |
| -3 | 0 |
| 1  | 4 |
| 2  | 0 |

- A. It is a function because elements repeat in the domain and range.
- B. It is not a function because the -3 repeats in the domain.
- C. It is not a function because the 0 repeats in the range.
- D. It is a function because zero is not in the domain.

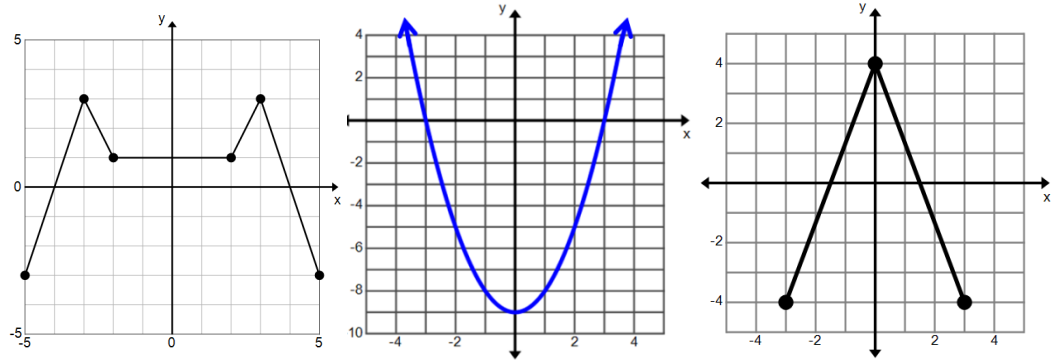
39. Are the following graphs discrete or continuous functions?



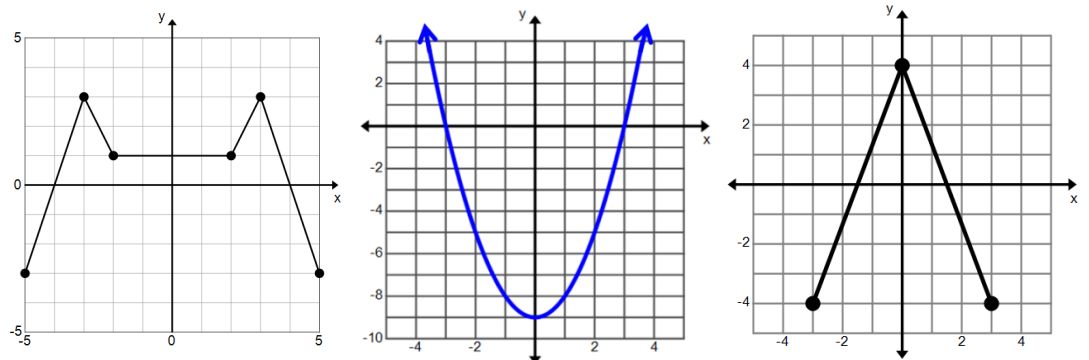
40. Determine if the following graphs are increasing or decreasing and positive or negative.



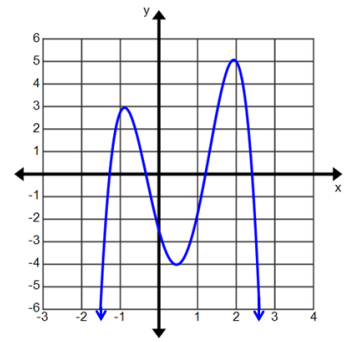
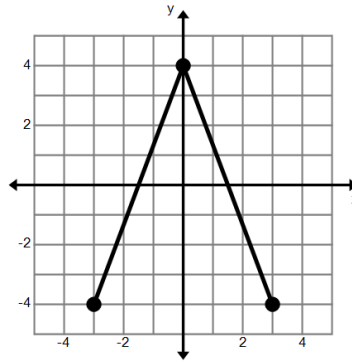
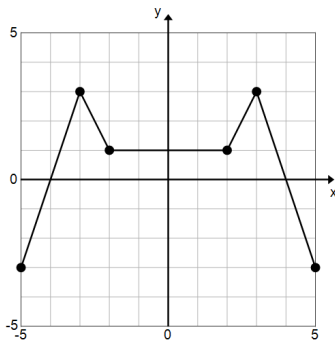
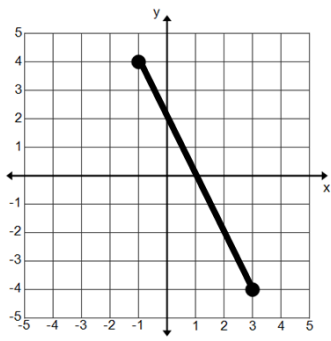
41. For each graph, write where it is positive and negative (using inequalities).



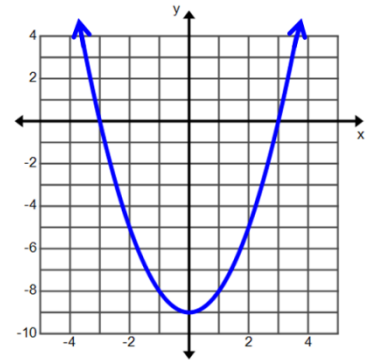
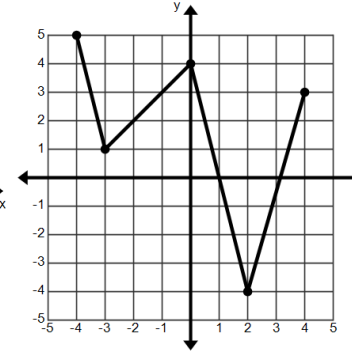
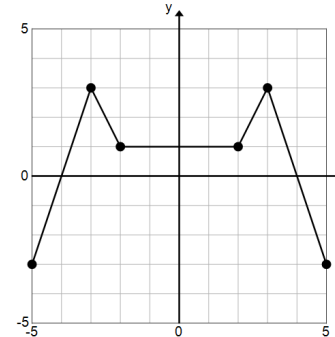
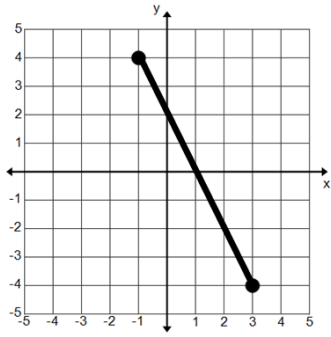
42. For each graph, write where it is increasing and decreasing (using inequalities).



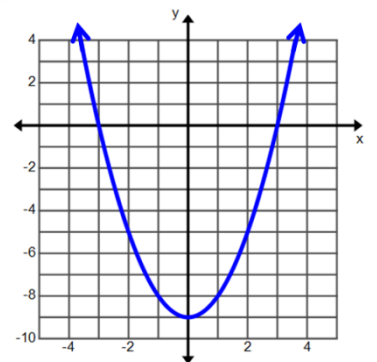
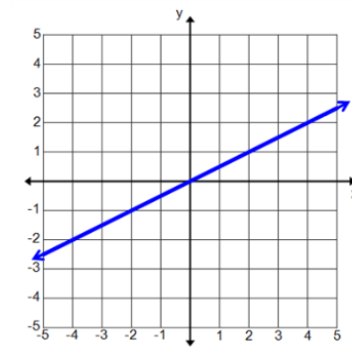
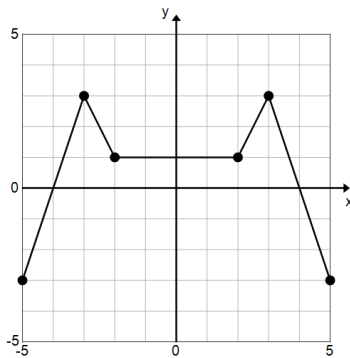
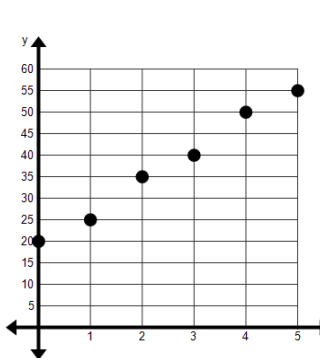
43. For each graph, what is the maximum?



44. For each graph, what is the minimum?



45. For each graph, determine the domain and range (using inequalities if necessary).



A bird is flying and dives into the ocean to catch a fish. The position of the bird is shown in the graph to the right. Answer each question using inequalities when necessary.

46. When was the bird in the water (below sea level)?

47. When was the bird rising?

48. When was the bird “diving”?

49. What was the maximum height the bird flew?

