

NAME: _____

I: Use the graph of $f(x)$ on the left to answer the following questions.

1. $f(0) =$ _____ 4. $f(2) =$ _____

2. $f(-2) =$ _____ 5. $f(-1) =$ _____

3. $f(3) =$ _____

6. Solutions to $f(x) = -2$ _____

7. Solutions to $f(x) = 1$ _____

8. Interval(s) of increasing: _____ 9. Interval(s) of decreasing: _____

10. Domain of f : _____ 11. Range of f : _____

12. What "test" can be used to determine that $f(x)$ is in fact a function?

II: The Elevator Ride The graph on the right depicts an elevator's course over a 60 second time period. Note that this is an extremely simplified graphical representation of an elevator's travels – a more accurate graph certainly would be a smoother curve than this one.

Describe what is happening during each time interval:

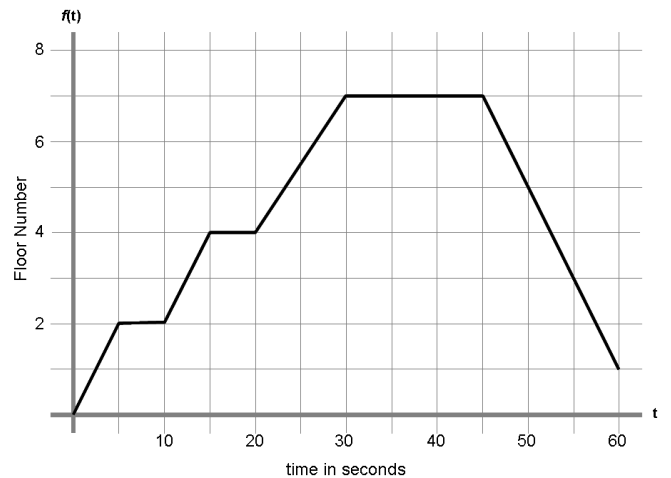
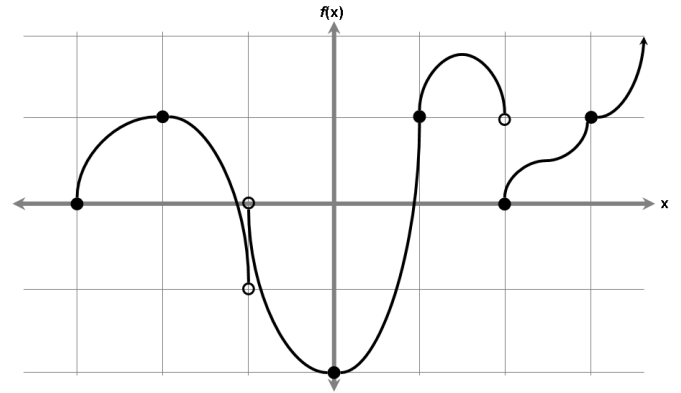
13. $[0,5]$ _____

14. $[5,10]$ _____

15. $[30,45]$ _____

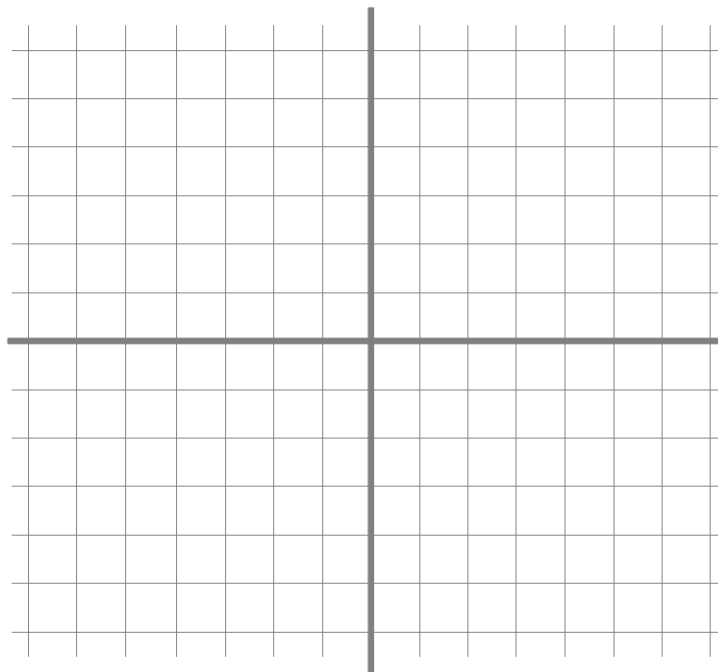
16. $[45,60]$ _____

17. What is a probable scenario for this particular elevator ride? Be specific.



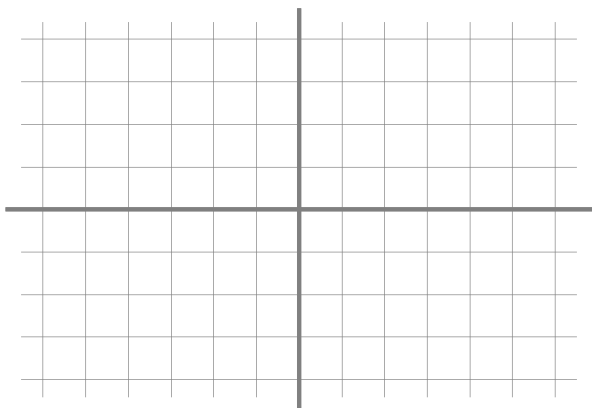
18. Draw a function that satisfies ALL of the following requirements:

- a. $f(-4) = 5$
- b. $f(-2) = 3$
- c. $f(-1) = -4$
- d. $f(1) = -6$
- e. $f(5) = 0$
- f. $f(3)$ does not exist
- g. The domain of the function is $(-\infty, 3) \cup (3, \infty)$
- h. The range of the function is $(-\infty, 5]$



III: Sketch each function. State the domain, range, and intercepts (if any).

19. $f(x) = x^2$

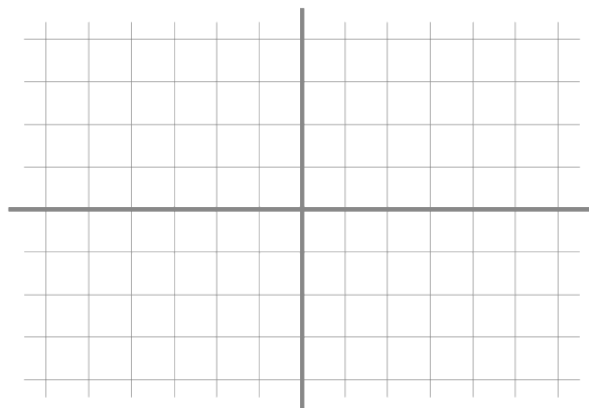


Domain: _____

Range: _____

Intercepts: _____

20. $f(x) = x^3$

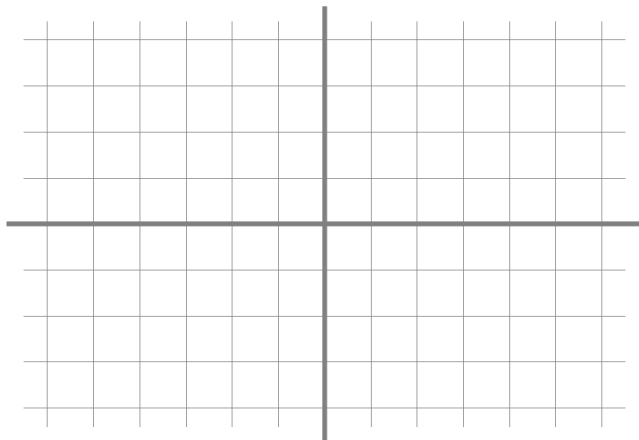


Domain: _____

Range: _____

Intercepts: _____

21. $f(x) = \sqrt{x}$

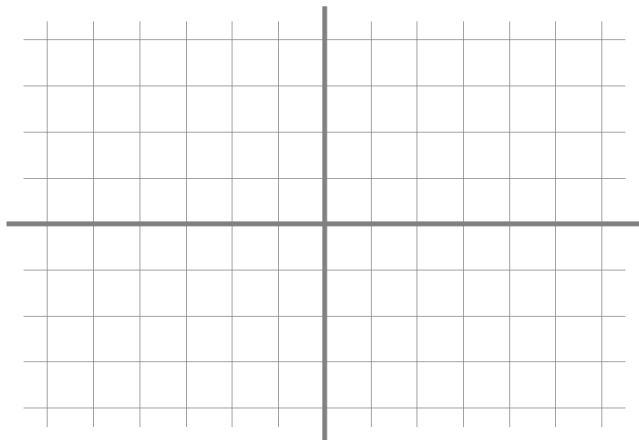


Domain: _____

Range: _____

Intercepts: _____

22. $f(x) = \sqrt[3]{x}$

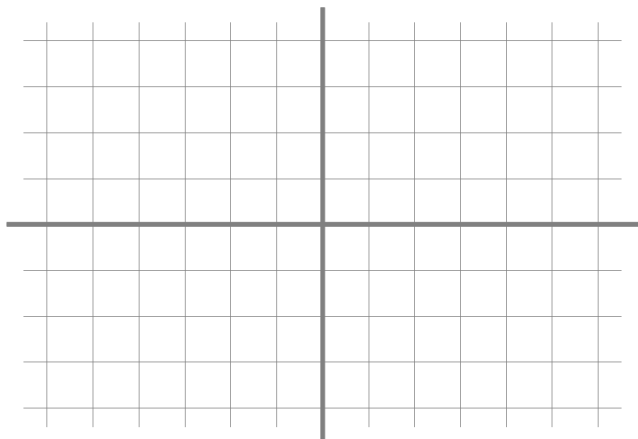


Domain: _____

Range: _____

Intercepts: _____

23. $f(x) = \ln x$

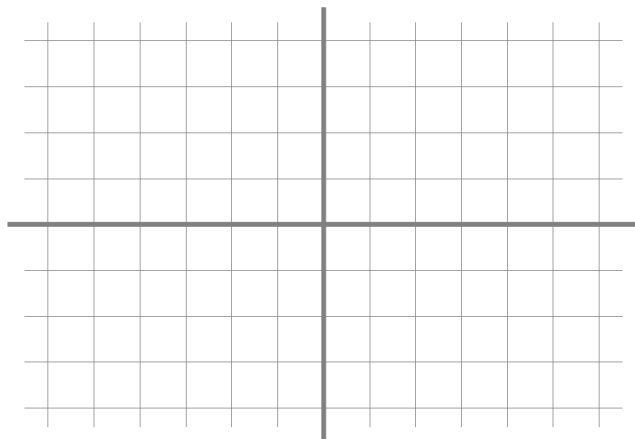


Domain: _____

Range: _____

Intercepts: _____

24. $f(x) = e^x$



Domain: _____

Range: _____

Intercepts: _____

IV: Use the graph on the right to answer the following questions. Assume that each increment on the Cartesian graph represents one unit in length.

25. $(f \circ g)(2) =$ _____

26. $g[g(5)] =$ _____

27. $(f + g)(-3) =$ _____

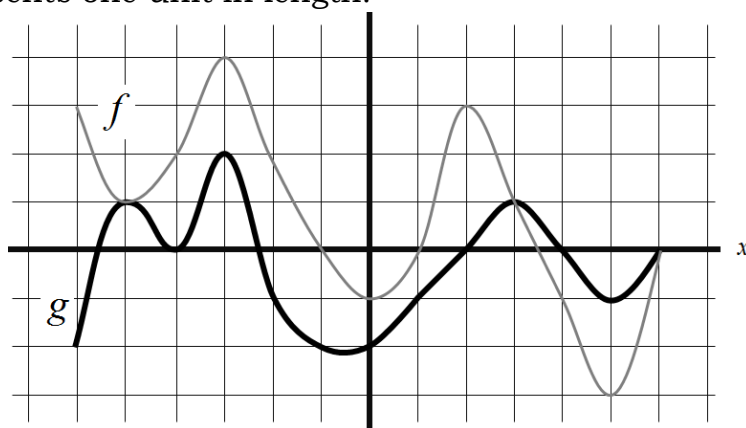
28. How many solutions are there to the equation $g(x) = 0$?

29. For what x -values does $f(x) = g(x)$? _____

30. What is the domain of $(f + g)(x)$? _____

31. What is the range of $f(x)$? _____

32. For what values of x is it true that $g(x) > f(x)$? _____



V: Use the table below to find each value.

x	0	1	2	3	4	5
$f(x)$	2	3	5	1	0	4
$g(x)$	5	2	3	4	1	0

33. $(f \circ g)(2) =$ _____

34. $(g \circ g)(4) =$ _____

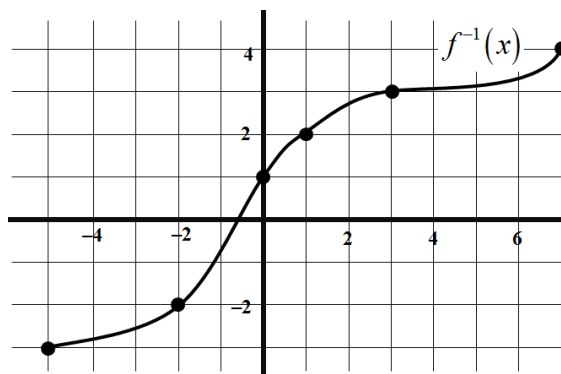
VI: Use the graph on the right of $f^{-1}(x)$ to answer the following questions. Assume that each increment on the Cartesian graph represents one unit in length.

35. $f^{-1}(-5) =$ _____

36. $f(4) =$ _____

37. $f^{-1}[f^{-1}(0)] =$ _____

38. For what value(s) of x is it true that $f(x) = f^{-1}(x)$?



39. What is the domain of $f^{-1}(x)$? _____

40. What is the domain of $f(x)$? _____