

Name _____
Mr. Schlansky

Date _____
Pre Calculus

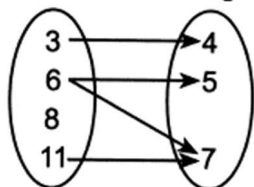
Functions Review Sheet

Determine whether the following relations are 1-1 functions, functions not 1-1, or not functions

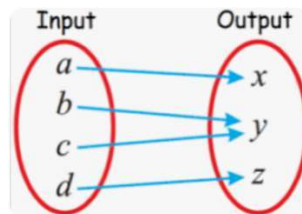
1. $\{(3,-2), (-2,3), (4,-1), (-1,4)\}$

2. $\{(1,0), (2,0), (3,0), (4,0)\}$

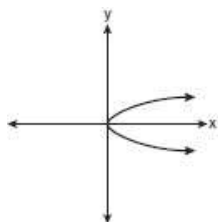
3. Domain Range



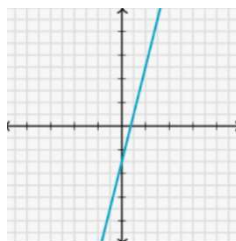
4.



5.

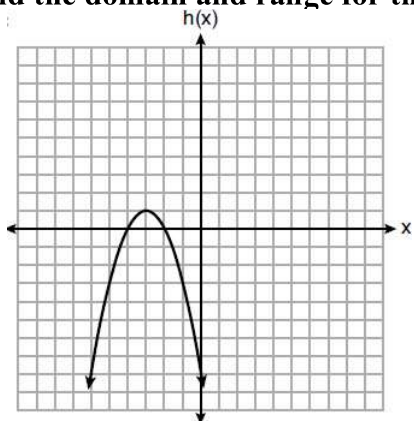


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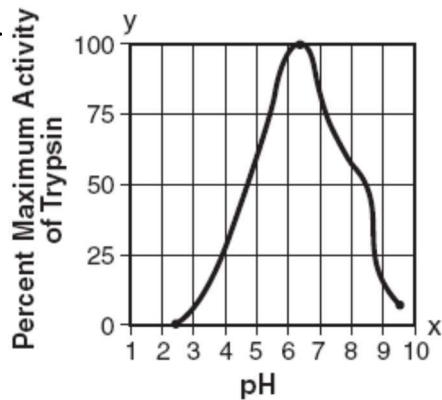


Find the domain and range for the functions below:

7.



8.



Find the domain of the following functions algebraically

9. $f(x) = 12 - \frac{1}{2}x^2 + 7x$

10. $f(x) = 2^{x-8} + 14$

11. $f(x) = \sqrt{\frac{1}{2}x - 8}$

12. $g(x) = \sqrt{2 - 4x}$

13. $f(x) = \frac{x - 8}{x^2 + 8x + 12}$

14. $p(x) = \frac{x^2 + 5x - 6}{x^2 - 5x + 6}$

15. $p(x) = \frac{x - 8}{\sqrt{2x - 12}}$

16. $q(x) = \frac{14}{\sqrt{12 - 4x}} + 8$

If $f(x) = 6x - 3$ and $g(x) = 2x^2 + x$, find:

17. $f(3)$

18. $g(-2)$

19. $f(g(1))$

20. $(g \circ f)(-2)$

21. $f(x+4)$

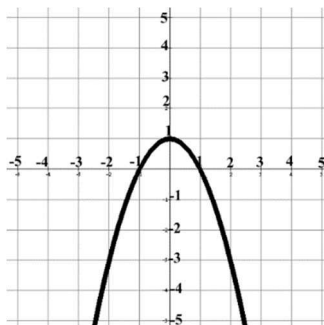
22. $g(x-1)$

23. $(f \circ g)(x)$

24. $g(f(x))$

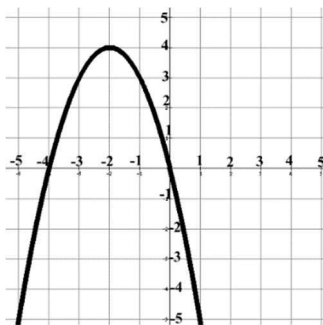
Use the following graphs to answer the questions that follow:

$f(x)$



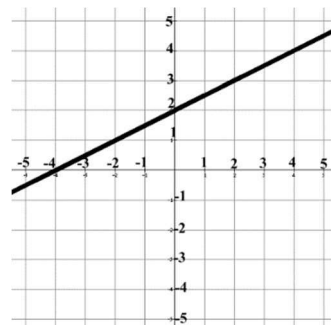
25. $h(2)$

$g(x)$



26. $g(-2)$

$h(x)$



27. $h(g(-4))$

28. $(f \circ f)(1)$

Find the inverse of the following functions algebraically

29. $f(x) = \frac{1}{2}x + 8$

30. $f(x) = -6x + \frac{1}{2}$

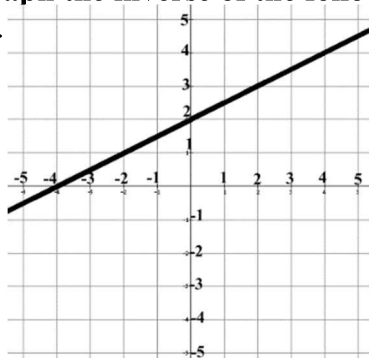
Algebraically determine if the following two functions are inverses of each other using composition

31. $f(x) = 4x - 1$, $g(x) = \frac{1}{4}x + 1$

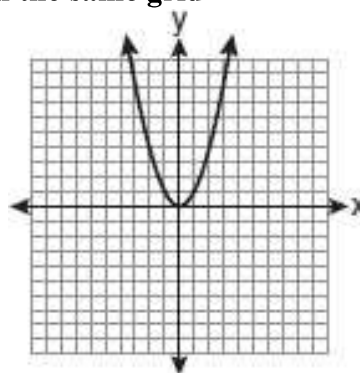
32. $f(x) = \frac{3}{2}x - 6$, $g(x) = \frac{2}{3}x + 4$

Graph the inverse of the following functions on the same grid

33.



34.



For each of the following, state how the parent function was transformed.

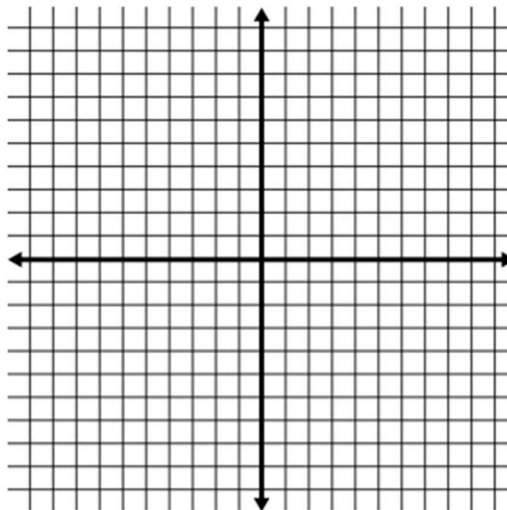
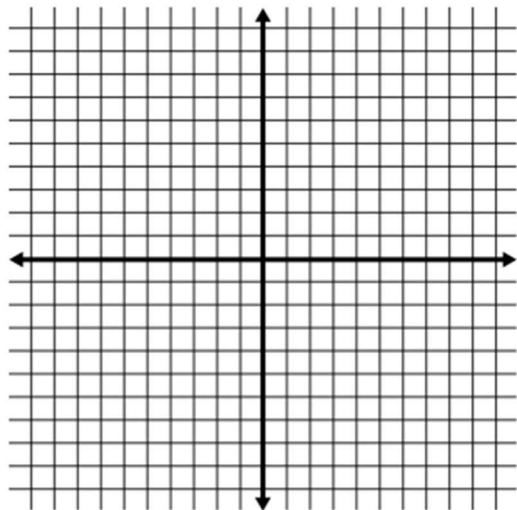
35. $f(x) = -|2(x+3)| - 2$

36. $f(x) = 2(-x-4)^2 + 3$

Sketch the graph for each of the following on the provided grid

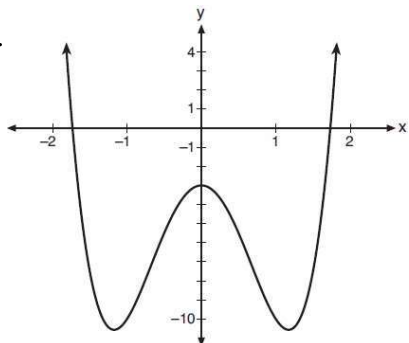
37. $f(x) = -(x+1)^3 + 2$

38. $f(x) = -\sqrt{x+6} - 1$

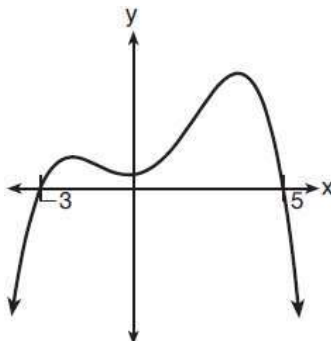


Graphically determine whether the following are even functions, odd functions, or neither. Explain your answer.

39.



40.



41. $f(x) = \frac{2}{x}$

Algebraically determine whether the following are even functions, odd functions, or neither. Explain your answer.

42. $f(x) = 2x^4 - 6x^3 + 1$

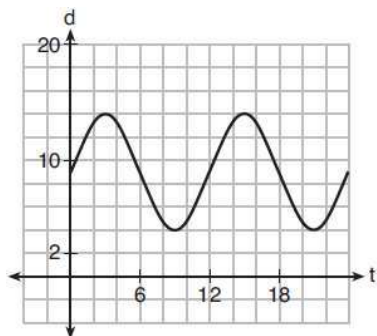
43. $f(x) = 2 - 3x^2 - 7x^6$

44. $f(x) = 2x^3 + 4x^5 - x$

45. The table below shows the number of hours of daylight on the first day of each month in Rochester, NY. Given the data, what is the average rate of change in hours of daylight per month from January 1st to April 1st? Interpret what this means in the context of the problem.

Month	Hours of Daylight
Jan.	9.4
Feb.	10.6
March	11.9
April	13.9
May	14.7
June	15.4
July	15.1
Aug.	13.9
Sept.	12.5
Oct.	11.1
Nov.	9.7
Dec.	9.0

46. The depth of the water at a marker 20 feet from the shore in a bay is depicted in the graph below. If the depth, d , is measured in feet and time, t , is measured in hours since midnight, what is the average rate of change of the depth of the water between 3AM and 9AM? Explain its meaning in the context of the problem.



47. The world population was 2560 million people in 1950 and 3040 million in 1960 and can be modeled by the function $p(t) = 2560(2.61)^{0.0187t}$, where t is time in years after 1950 and $p(t)$ is the population in millions. Determine the average rate of change of $p(t)$ in millions of people per year, from $4 \leq t \leq 8$. Round your answer to the nearest hundredth. Explain its meaning in the context of the problem.