

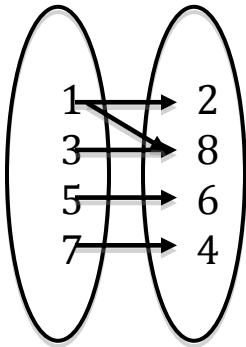
Please put all work on separate paper.

Find the domain and range of each relation, and determine whether it is a function.

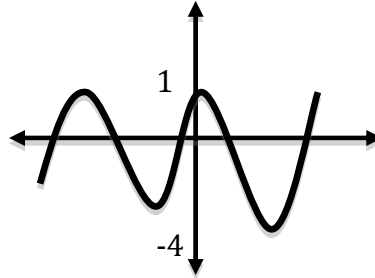
1. $\{(2, 1) (-4, 5) (1, 7) (2, -3) (-1, 2)\}$

2. $\{(1, -1) (2, -2) (3, -3) (4, -4) (5, -5)\}$

3.



4.



Suppose $f(x) = 3x - 4$ and $g(x) = |x| + 3$, find the following.

5. $f(2)$

6. $f\left(\frac{1}{3}\right) + g(-2)$

7. $\frac{f(1)}{g(1)}$

Find the slope of the line containing the two points.

8. $(-1, 7)$ and $(4, 1)$

9. $(-4, 5)$ and $(-4, -7)$

Use point-slope form to find the equation of the line given:

10. slope = 6 and $\left(\frac{1}{2}, 2\right)$ is on the line.

11. the line contains $(1, 5)$ and $(-3, 3)$

12. Determine the x-intercept and y-intercept for each of the lines you found in #10 and #11.

For each of the following state the parent function, transformations, domain and range. Make a sketch of the function.

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

14. $f(x) = -2(x - 1)^2$

15. $g(x) = \frac{1}{2}\sqrt{x} - 2$

16. $g(x) = (x + 2)^3 + 4$

Given the parent function and a description of the transformations, write the equation of the transformed function.

17. Exponential – shift down 3 and to the right 2.

18. Square Root – steeper, shift up 4

19. Absolute Values – reflect over the x-axis, less steep (wider), left 5.

20. Given $f(x) = 2(x - 3)^3 + 4$, write an equation whose graph shifted left 2 units and down 5 units.

Solve the following systems.

21. $2x + 3y = 12$
 $5x - y = 13$

22. $3x + 2y = 10$
 $6x + 4y = 15$

23. $2x - y + z = 4$
 $x + 3y - z = 11$
 $4x + y - z = 14$

24. You research the cost of movie tickets for recent years to look for trends. The table shows your data.

Year	Average Cost of Movie Ticket
1995	4.35
1997	4.59
1999	5.06
2001	5.65
2003	6.03
2005	6.41
2007	6.88

- What is the equation for the line of best fit?
- What the correlation coefficient and what does that tell you about the data?
- What is the slope and how does it relate to the context of the problem
- Based on your linear model, how much would you expect to pay for the movie ticket in 2025?