

For problems 1-4 State the domain and range of each relation.

Then determine whether the relation is a function.

1. $\{(1, 2), (3, 4), (5, 6), (7, 8)\}$

yes $D: \{1, 3, 5, 7\}$ $R: \{2, 4, 6, 8\}$

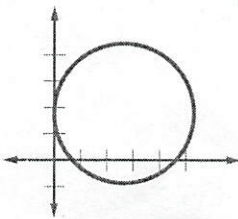
2. $\{(-4, 1), (3, 3), (1, 1), (-2, 5), (3, -4)\}$

no $D: \{-4, -2, 1, 3\}$ $R: \{-4, 1, 3, 5\}$

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

no $D: \{1, 2\}$ $R: \{-2, 0, 4\}$

4.



no $D: [0, 3]$ $R: [-1, 3]$
or $0 \leq x \leq 3$ or $-1 \leq y \leq 3$

For problems 5-10: Find each value if $f(x) = -3x + 2$ and $g(x) = 2x^2 + x - 1$ and $h(x) = |x + 4|$

5. $f(4) = -3(4) + 2 = -10$

6. $g(2) = 2(2)^2 + 2 - 1 = 9$

7. $h(-3) = |-3 + 4| = 1$

8. $f(-2) = -3(-2) + 2 = 8$

9. $h(5) = |5 + 4| = 9$

10. $g(-1) = 2(-1)^2 - 1 - 1 = 0$

For problems 11-15: State whether the function is a linear function. Write yes or no. Explain

11. $3x + 4y = 12$ yes, can write as $y = mx + b$

12. $x^2 + y^2 = 4$ no, has exponents

13. $y = \sqrt{x} + 4$ no, square root

14. $f(x) = -2x + 9$ yes can write as $y = mx + b$

15. $\frac{1}{x} + 3y = 5$ no; divide by x

For problems 16-20: Write each equation in standard form. Identify A, B, and C

16. $2x = 5y + 10$ $2x - 5y = 10$; $A=2, B=-5, C=10$

17. $-4y = 3x - 24$ $3x + 4y = 24$; $A=3, B=4, C=24$

18. $4x = 8y - 12$ $4x - 8y = -12$ or $x - 2y = -3$ $A=1, B=-2, C=-3$

19. $\frac{5}{6}x = \frac{1}{2}y - 2$ $5x = 3y - 12$; $5x - 3y = -12$; $A=5, B=-3, C=-12$

20. $y = \frac{2}{5}x + \frac{3}{2}$ $10y = 4x + 15$; $4x - 10y = -15$; $A=4, B=-10, C=-15$

For problems 21-22: Find the slope of the line that passes through each pair of points.

21. $(2, 5), (6, -3)$ $\frac{-3-5}{6-2} = \frac{-8}{4} = -2$

22. $(8, 2), (2, 8)$ $\frac{8-2}{2-8} = \frac{6}{-6} = -1$

For problems 23-30: Write an equation in slope-intercept form for the line that satisfies each set of conditions.

23. slope -2 , y -intercept of 3 $y = -2x + 3$

24. slope $\frac{2}{3}$, passes through $(4, -1)$
 $y + 1 = \frac{2}{3}(x - 4)$; $y + 1 = \frac{2}{3}x - \frac{8}{3}$; $y = \frac{2}{3}x - \frac{11}{3}$

25. passes through $(-2, 4), (0, 8) \Rightarrow b=8$
 $\frac{8-4}{0-(-2)} = \frac{4}{2} = 2$ $y = 2x + 8$

26. passes through $(3, 5), (-1, 5)$
 $\frac{5-5}{-1-3} = \frac{0}{-4} = 0$ $y = 5$

27. passes through $(1, 2)$ and is parallel to $y = 4x - 3$
 $y - 2 = 4(x - 1)$ $m=4$ $y - 2 = 4x - 4$; $y = 4x - 2$

28. passes through $(-3, 5)$ and is perpendicular to $y = \frac{2}{3}x - 8$
 $y - 5 = -\frac{3}{2}(x + 3)$ $m = -\frac{3}{2}$ $y - 5 = -\frac{3}{2}x - \frac{9}{2}$; $y = -\frac{3}{2}x + \frac{1}{2}$

29. passes through $(2, 4)$ and is parallel to $3x - 2y = 7$
 $y - 4 = \frac{3}{2}(x - 2)$ $m = +\frac{3}{2}$ $y - 4 = \frac{3}{2}x - 3$; $y = \frac{3}{2}x + 1$

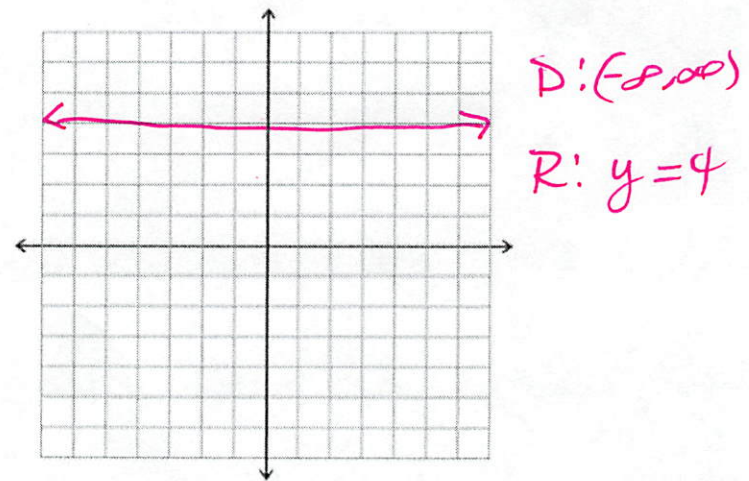
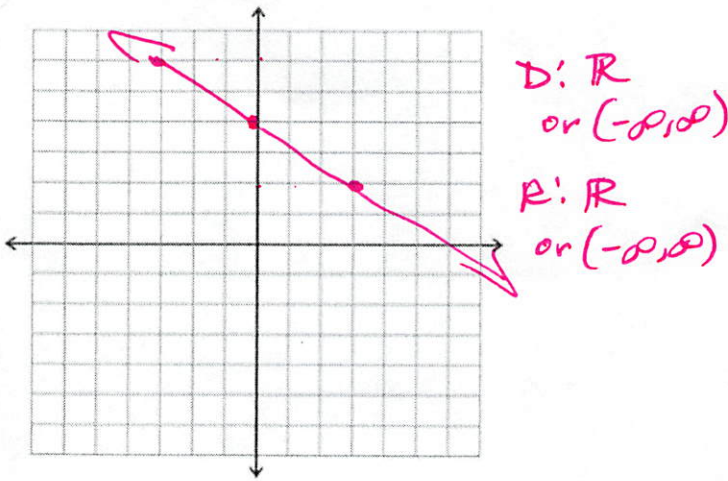
30. Drew paid \$250 fee when he adopted a puppy. The average monthly cost of feeding and caring for the puppy is \$32. Write an equation that represents the total cost of adopting and caring for the puppy for x months.

$y = 32x + 250$

For problems 31- 34: Graph each function. Identify the **Domain and Range**.

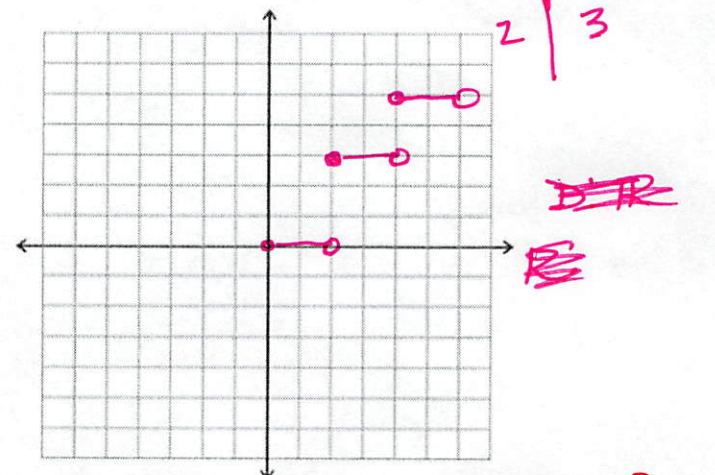
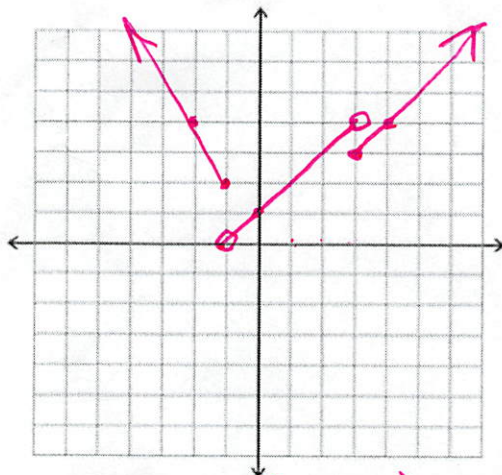
31. $f(x) = -\frac{2}{3}x + 4$

32. $f(x) = 4$

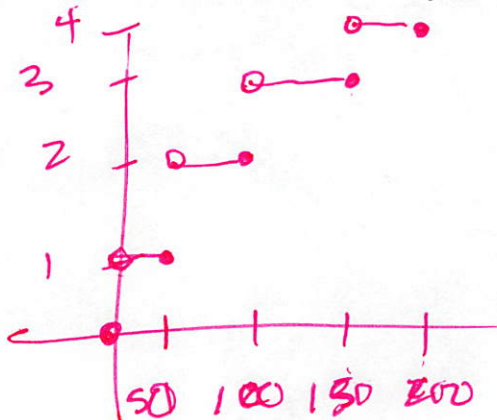


33. $f(x) = \begin{cases} -2x & \text{if } x \leq -1 \\ x+1 & \text{if } -1 < x < 3 \\ x & \text{if } x \geq 3 \end{cases}$

34. $f(x) = 3 \left\lfloor \frac{1}{2}x \right\rfloor$

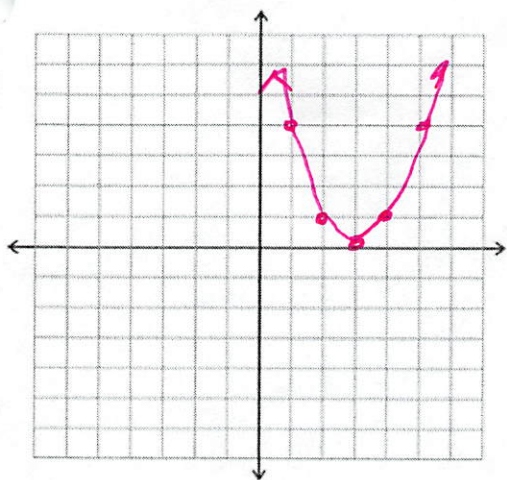


35. Mrs. Taylor is going to Michigan to watch the football game. The airline she is flying on will let her check up to 4 bags, up to 50 pounds each. Draw a graph representing the number of pounds x and the number of checked bags y that Mrs. Taylor can take.



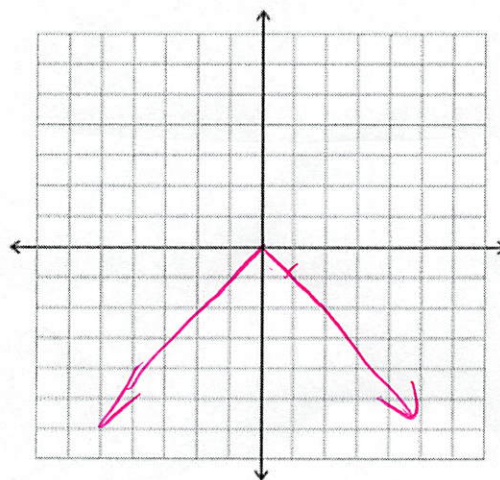
For problems 36-39: State the type of function, the transformations, and graph the function

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



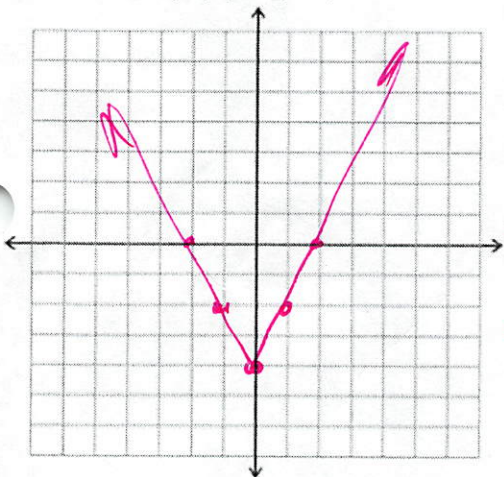
quadratic
3 right

37. $f(x) = -|x|$



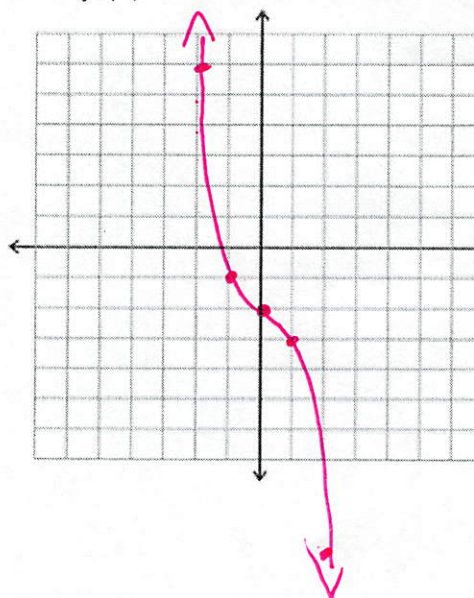
absolute
value
flip on
x-axis

38. $f(x) = |2x| - 4$



absolute
value
distance
2
down
4

39. $f(x) = -x^3 - 2$



cubic
down 2
flip on
x-axis