

Interpreting Transformations

Starting from $y = f(x)$, list ALL transformations in the correct order:

- Horizontal reflection (if any)
- Horizontal stretch/compression (scale factor)
- Horizontal translation (Direction: left/right)
- Vertical reflection (if any)
- Vertical stretch/compression (scale factor)
- Vertical translation (Direction: up/down)

Do **not** combine steps. List each transformation separately.

Single Basic Transformations

1. $y = f(-x)$

2. $y = -f(x)$

3. $y = f(x) + 2$

4. $y = f(x + 2)$

5. $y = 2f(x)$

6. $y = \frac{1}{3}f(x)$

Simple Reflections + Translations

7. $y = -f(x + 2)$

8. $y = f(-x) + 2$

9. $y = -f(-x) + 3$

10. $y = -f(x + 7) - 5$

Horizontal Stretch/Compression

11. $y = f(2x)$

12. $y = f(3x)$

13. $y = f\left(\frac{2}{3}x\right)$

14. $y = f(5(x - 2))$

15. $y = f(-3(x - 3))$

16. $y = f(2x - 4)$

17. $y = -f(2x + 4) - 2$

Vertical Stretch/Compression

18. $y = 2f(3x) + 1$

19. $y = -0.5f(x) - 4$

20. $y = -\frac{1}{2}f(-4x) + 3$

21. $y = 2f(x + 1)$

22. $y = \frac{1}{3}f(2x) - 4$

Rewrite the equation in the form: $y = af(b(x - h)) + k$ if necessary.

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Multiple Internal + External

23. $y = \frac{3}{2}f(3(x-1))$

24. $y = 3 - 5f(0.5(x - 8))$

25. $y = -\frac{4}{3}f(2x+4) + 1$

26. $y = \frac{2}{3}f(0.3x - 1.2) - \frac{5}{3}$

27. $y = -\frac{1}{4}f(x - 3) - \frac{3}{4}$

28. $y = 12 - \frac{3}{5}f(8 - 2x)$

29. $y = -\frac{2}{3}f(3x + 12) + 1$

Must Rearrange First (Highest Difficulty)

30. $-y = f(-x + 3) - 2$

31. $-y + 1 = f(-(x - 2))$

32. $4 - y = f(3 - x)$

33. $11 + y = f(-x + 1) + 2$

34. $-0.2y = f(3x - 4) + 1$

35. $y + 2 = -5f(12 - 3x)$

36. $2y + 3 = -3f\left(6 - \frac{3x}{4}\right)$

37. $\frac{2}{3}(6 - y) = f\left(3 - \frac{x}{4}\right)$

38. $-\frac{3}{4}y = f(10 - 4x) + 1$

39. $\frac{1}{2}y = f(4x + 1)$

40. $3(y - 1) = f\left(\frac{x}{2} + 3\right)$