Types in Math

Consider the definitions below. Which of the mathematical phrases make sense?

$$x_1 = 5 \qquad\qquad x_2 = -3$$
$$z_1 = 3 + 4i \qquad\qquad z_2 = 2 - i$$
$$A_1 = \{1, 2, 3\} \qquad\qquad A_2 = \{8\}$$
$$f_1(x) = x^2 + 7 \qquad\qquad f_2(x) = |x|$$
$$g_1(x, y) = x - y^2 \qquad\qquad g_2(x, y) = xy$$

$$M = [2 \quad 3 \quad 5 \quad 7 \quad 11]$$

$$N = \begin{bmatrix} 3 \\ 1 \\ 4 \\ 1 \\ 5 \end{bmatrix}$$

1. $x_1 + x_2$

2. $x_1 + z_2$

3. $x_1 + A_1$

4. $f_1(x_2)$

5. $f_2(z_1)$

6. $g_1(x_1)$

7. $x_2 M$

8. $x_2 \in A_1$

9. $A_1 \in x_2$

10. $f_1(f_2(x_1))$

11. $f_2 \circ f_1$ (where $\circ$ is function composition)

12. $g_1(x_1, x_2)$

13. $g_2(z_1, z_2)$

14. $g_2 \circ g_1$

15. $x_1 > x_2$

16. $z_1 > z_2$

17. $|x_1|$

18. $|z_1|$

19. $|A_1|$

20. $|f_1|$

21. $|M|$

22. MN

23. NM

24. $g_2(M, N)$

25. $|MN|$

26. $|NM|$