Week 3: Homework 3

1-6. Find the discriminant of the quadratic equation. Give the number and type of solutions.

1. $x^2 - 8x + 16 = 0$

2. $s^2 + 7s + 11 = 0$

3. $8p^2 + 8p + 3 = 0$

4. $-4w^2 + w - 14 = 0$

5. $5x^2 + 20x + 21 = 0$

6. $8z - 10 = z^2 - 7z + 3$

7-14. Use the quadratic formula to solve the equation: $\mathbf{x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}}$

7. $x^2 - 4x - 5 = 0$

8. $t^2 + 8t + 19 = 0$

9. $8w^2 - 8w + 2 = 0$

10. $4x^2 - 8x + 1 = 0$

11. $3r^2 - 8r - 9 = 0$

12. $3w^2 - 12w = 12$

13. $s^2 = -14 - 3s$

14. $3 - 8v - 5v^2 = 2v$

15-20. Write the quadratic function in vertex form. Then, identify the vertex.

15. $f(x) = x^2 - 8x + 19$

16. $f(x) = x^2 + 12x + 37$

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

18. $f(x) = 2x^2 + 24x + 25$

19. $f(x) = 5x^2 + 10x + 7$

20. $f(x) = x^2 - 4x + 9$

21-26. Solve the equation by completing the square.

21. $x^2 + 4x = 10$

22. $x^2 + 8x = -1$

23. $x^2 + 6x - 3 = 0$

24. $x^2 + 18 = -12x$

25. $x^2 - 18x + 86 = 0$

26. $x^2 = 2x - 25$

27-32. Write the expression given as a complex number in standard form.

27. $-9i(2 - i)$

28. $(5 + i)(4 - 2i)$

29. $(2 - 5i)(2 + 5i)$

30. $(8 - 6i) + (7 + 4i)$

31. $(2 - 3i) - (6 - 5i)$

32. $\frac{4i}{-3 + 6i}$