

Key

Simplify. Express each number in terms of i .

1. $\sqrt{-27}$ $3\sqrt{3}i$

2. $\sqrt{-48}$ $4i\sqrt{3}$

Solve each equation.

3. $x^2 = -256$ $\pm 16i$

4. $4x^2 + 144 = 0$ $\pm 6i$

Find each complex conjugate.

5. $\sqrt{13} + 9i$ $\sqrt{13} - 9i$

6. $-11 + 45i$ $-11 - 45i$

Find the value of the discriminant ($b^2 - 4ac$), the number of solutions, and the type of solutions.

7. $-x^2 - 5x + 6 = 0$

8. $4x^2 - 5x - 6 = 0$

9. $x^2 - 6x + 9 = 0$

$a = -1$
 $b = -5$ 49
 $c = 6$

$a = 4$
 $b = -5$ 121
 $c = -6$

$a = 1$
 $b = -6$ 0
 $c = 9$

Find the zeros of the function by using the Quadratic Formula.

10. $x^2 - 3x - 10 = 0$

11. $x^2 - 16 = 0$

$a = 1$ -2
 $b = -3$ 5
 $c = -10$

$a = 1$ +4
 $b = 0$ -
 $c = -16$

12. $4x^2 + 4x = 15$

13. $x^2 - 16x + 64 = 0$

$a = 4$ -5/2
 $b = 4$ 3/2
 $c = -15$

$a = 1$ 8
 $b = -16$
 $c = 64$

Determine whether the ordered pair is a solution of the inequality. Show your work

14. $y < x^2 - 2x + 4$, (2, 1)

15. $y > 2x^2 + x - 5$, (-2, 0)

16. $y \leq 2x^2 + 5x + 6$, (2, -4)

$1 < 2^2 - 2(2) + 4$
 $1 < 4 - 4 + 4$ No
 $1 < 4$ -

$0 > 2(-2)^2 + (-2) - 5$
 $0 > 8 - 2 - 5$ No
 $0 > 1$ -

$-4 \leq 2(2)^2 + 5(2) + 6$
 $-4 \leq 8 + 10 + 6$ YES
 $-4 \leq 24$ -

Solve each quadratic inequality algebraically, then graph the solution on a number line.

17. $x^2 - 11x + 13 < 25$

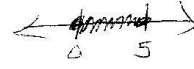
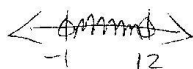
18. $x^2 - 5x - 24 \geq 0$

19. $x^2 - 5x + 3 \leq 3$

$x^2 - 11x - 12 = 0$
 $(x - 12)(x + 1) = 0$
 $x = 12$ $x = -1$

$x^2 - 5x - 24 = 0$
 $(x - 8)(x + 3) = 0$
 $x = 8$ $x = -3$

$x^2 - 5x = 0$
 $x(x - 5) = 0$
 $x = 0$ $x = 5$



Graph each quadratic inequality.

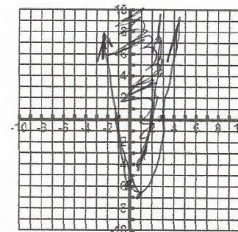
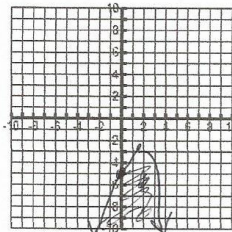
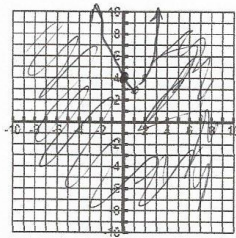
KEY

10-22-12

20. $y \leq x^2 - 2x + 4$

21. $y \leq -x^2 + 3x - 5$

22. $y > 2x^2 - 3x - 6$



Add and Subtract the Complex Number.

23. $(2 + 4i) + (3 - 2i)$

$5 + 2i$

24. $(-5 - 6i) + (1 - 12i)$

$-4 - 18i$

25. $(-8 - 3i) - (-6 - 7i)$

$-2 + 4i$

Multiply or simplify the complex number.

26. $(2 + 2i)(4 - i)$

$10 + 6i$

27. $(4 + 3i)^2$

$7 + 24i$

28. $\frac{5 - 2i}{3 + i}$

$\frac{13}{10} - \frac{11}{10}i$