

Write a quadratic function in standard form for a parabola that contains each set of points.

1. (1, 4), (-2, 15), (0, 3)

2. (-1, -16), (2, 5), (5, 8)

3. Write a quadratic function in vertex form for a parabola that has vertex (-1, 4) and contains the point (-2, 2).

4. Write a quadratic function in intercept form for a parabola that has x-intercepts (3, 0) and (9, 0) and contains the point (14, 77).

Graph each inequality in the coordinate plane.

5. $y > x^2 - 5x + 4$

6. $y \geq \frac{-1}{2}x^2 - 2x + 4$

Solve using algebra.

7. $3x^2 + x + 8 \leq 12$

8. $3x^2 - \frac{37}{20}x - \frac{3}{10} > 0$

9. Find k so that $k^2x^2 - 8x + 4 = 0$ has 2 real solutions.

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

2. $f(x) = -x^2 + 8x - 7$

3. $f(x) - 2(x+1)^2 + 4$

4. $f(x) = \frac{7}{5}(x-3)(x-9)$

7. $\frac{-4}{3} \leq x \leq 1$

8. $x > \frac{3}{4}$ or $x < \frac{-2}{15}$

9. $-4 < k < 4$

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Simplify. Give answers in $a + bi$ form where needed.

1. $(-5 + 2i) + (-2 + 8i)$

2. $(3 - 3i) - (4 + 7i)$

3. $3i(2 - 3i)$

4. $(-1 + 6i)(3 - 2i)$

5. $(4 - 3i)^2$

6. $(2 + i)^3$

7. i^{78}

8. $2i^{11}$

9. $\frac{2 + 4i}{3i}$

10. $\frac{15}{3 - i}$

11. $\frac{5 + 2i}{3 + 6i}$

12. $|-3i|$

13. $|4 + 2i|$

14. $-4i\sqrt{6} \cdot i\sqrt{10}$

15. $\sqrt{-2} \cdot \sqrt{-48}$

16. Solve over the complex numbers using any method: $x^2 - 8ix + 9 = 0$.

17. Write a quadratic function for a parabola that contains the points $(-4, -7)$, $(-3, 3)$, and $(3, -21)$.

6. $2 + 11i$ 10. $\frac{9}{2} + \frac{3}{2}i$ 11. $\frac{3}{5} - \frac{8}{15}i$ 13. $2\sqrt{5}$ 15. $-4\sqrt{6}$ 16. $9i, -i$ 17. $f(x) = -2x^2 - 4x + 9$

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