1. Perform each operation. Write answers in standard form.
    a. $(-8 + 2i)(-1 + i)$
    b. $\frac{-7-i}{-1-i}$

2. Simplify each power of $i$
    a. $i^{110}$
    b. $i^{-27}$

3. Solve each equation
    a. $(2 - 3x)^2 = 8$
    b. $(-2x + 5)^2 = -8$

4. Solve each by completing the square:
    a. $x^2 - 10x + 18 = 0$
    b. $-2x^2 + 4x + 3 = 0$

5. Evaluate the discriminant for each equation. Then use it to determine the number and type of solutions.

   a.  $8x^2 = -2x - 6$

   b.  $x(9x + 6) = -1$

6. A model rocket is launched from the roof of a building. Its flight path is modeled by $h = -5t^2 + 30t + 10$ where $h$ is the height of the rocket above the ground in meters and $t$ is the time after the launch in seconds.

   a.  What is the rockets height at time $t = 4$?

   b.  At what time does the rocket hit the ground?

7. Zach went into a frame-it-yourself shop. He wanted a frame 3 inches longer than it was wide. The frame he chose extended 1.5 inches beyond the picture on each side. Find the outside dimensions of the frame if the area of the unframed picture is 70 $in^2$.

8. Solve each equation:

a. $\frac{13}{x^2+10} = \frac{2}{x}$

b. $2 - \frac{5}{x} = \frac{3}{x^2}$

c. $\frac{2}{x+2} + \frac{1}{x+4} = \frac{4}{x^2+6x+8}$

d. $(x^2 - 6x)^{\frac{1}{4}} = 2$

e. $\sqrt{2x+3} = x + 2$

f. $\sqrt{x} - \sqrt{x+3} = -1$

g. $\sqrt[5]{2x} = \sqrt[5]{3x+2}$

9. Solve each inequality. Give the solution set using interval notation.

    a. $x^2 + 4x - 21 > 0$                          b. $x^2 - 3x \geq 5$

    c. $\frac{x+7}{2x+1} \leq 1$                             d. $\frac{3}{x+2} > \frac{2}{x-4}$