Practice Quiz 7 Name: _____

Simplify the following and write your answer in standard $a + bi$ form.

1. $\sqrt{-45}$

2. $\frac{4-2i}{-2-5i}$

3. i^{35}

Solve the following equations for the given variable. If there is more than one solution, separate them with commas.

4. $3u^2 - 10u + 21 = 0$

5. $x^2 - 10x + 10 = 0$
   (by completing the square)
   Form:
   - o $(x + \_\_\_\_\_)^2 = \_\_\_\_\_$
   - o $(x - \_\_\_\_\_)^2 = \_\_\_\_\_$

   Solution

   $x = \_\_\_\_\_$

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

Determine all the solutions to the equations below. If there is more than one solution, separate them with commas.

7. $x^4 + 6x^2 + 8 = 0$

8. Suppose $R(x)$ is a polynomial of degree 13 whose coefficients are real numbers. Also, suppose that $R(x)$ has the following zeros: $7, -8, 5i, -2 - 4i$.

a) Find another zero of $R(x)$.

b) What is the maximum number of real zeros that $R(x)$ can have?

c) What is the maximum number of non-real zeros that $R(x)$ can have?

d) If the leading coefficient of the polynomial was -3, what can the polynomial look like? Find a polynomial expression that has all the properties mentioned in parts a)-d)

Solve the following problems. If there is no solution, please state so.

9. A rocket model is launched with an initial velocity of 235 ft/s. The rocket's height h (in feet) after t seconds is given by the following.

$$h = 235t - 16t^2$$

Find all the values of t for which the rocket's height is 151 feet. Round your answers to the nearest hundredth. If there is more than one answer, use or to separate them.