

INSTRUCTIONS: You must show enough work to justify your answer on **ALL** problems. Correct answers with no work (or inconsistent work) shown **will not** receive full credit. **All answers are to be exact; no decimal approximations.** You are **NOT** allowed to use any electronic device for this exam.

1. Simplify the following. Write your answer in $a + b i$ form. **Put a box around your answer.**

a. $\frac{15 - \sqrt{-72}}{21}$ (5 pts.)

b. $(9 - 4i)^2$ (5 pts.)

c. $\frac{6 - 7i}{3 - 5i}$ (8 pts.)

2. Solve the following equations by the indicated method. **Put a box around your answer(s).**

a. $9y^2 + 45 = 0$ using square roots (5 pts.)

b. $5(x + 3)^2 - 37 = 53$ using square roots (5 pts.)

c. $8t^2 - 3 = 6t$ using the Quadratic Formula (10 pts.)

3. Solve the following equations. **Put a box around your answer(s).**

a. $2w^5 = 54w^2$ (12 pts.)

b. $3|8t - 5| + 14 = 41$ (6 pts.)

c. $3y^3 + 7y^2 - 12y - 28 = 0$ (8 pts.)

d. $\frac{3x}{x-6} - \frac{5}{x-2} = \frac{x^2 + 6x}{x^2 - 8x + 12}$ (10 pts.)

e. $\sqrt{x+13} - \sqrt{2x+12} = 1$ (12 pts.)

4. Solve the following inequalities. Write the solution set in interval notation.

a. $-1 \leq \frac{7 - 4x}{3} < 5$ (7 pts.)

Answer _____

b. $4|y + 6| - 11 > 25$ (7 pts.)

Answer _____