

NAME: _____ Score _____/10

SHOW ALL YOUR WORK IN A NEAT AND ORGANIZED FASHION

- The norm of a complex number $a + bi$ is $a^2 + b^2$.
- The conjugate of $3 - 4i$ is $3 + 4i$.
- When both sides of an equation are multiplied by an expression containing a variable the solution set of the resulting equation **contains** the solution set of the original equation.
- Complete the following statement of the quadratic formula.

The solutions of a quadratic equation $ax^2 + bx + c = 0$ are given by $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$.

5. T **F** $5x^3 + 4x - 7 = 0$ is a quadratic equation.

6. T **F** $i = -1$.

7. Compute the sum: $(2 - 3i) + \left(\frac{3}{4} + 5i\right)$. Your answer should involve improper fractions but no mixed numbers and no decimals.

$$(2 - 3i) + \left(\frac{3}{4} + 5i\right) = \left(2 + \frac{3}{4}\right) + (-3 + 5)i = \frac{11}{4} + 2i$$

8. Compute the product: $(-2 - 3i)(7 - 5i)$.

$$(-2 - 3i)(7 - 5i) = -14 + 10i - 21i + 15i^2 = -14 - 11i - 15 = -29 - 11i$$

9. Circle each irrational number in the following list.

15 $\sqrt{\frac{3}{4}}$ $\sqrt{8}$ $\sqrt{16}$ $\sqrt{6}$ -3 π -32.75 3.14

10. When both sides of Equation (A) $\frac{2}{x-5} = \frac{3x}{x+1}$ are multiplied by the expression $(x-5)(x+1)$ we obtain Equation (B) $2x + 2 = 3x^2 - 15x$.

Suppose the solution set for Equation A is the set K and the solution set for Equation B is the set M. What is the relation between the two solution sets K and M? No computations are required. In fact, computations will tell me you do not understand the concept. $K \subseteq M$