

NAME: _____ Score _____/10

Please **print** your name

1. **T** F Every complex number has a norm.
2. **T** F Every complex number has a conjugate.
3. **T** F Every non-zero complex number has a multiplicative inverse.
4. **T** F Every non-zero real number has a multiplicative inverse.
5. **T** F The multiplicative inverse of a fraction is its reciprocal.
6. Write the conjugate of the complex number $2 + 5i$.

$2 - 5i$ is the conjugate of $2 + 5i$

7. Write the norm of the complex number $2 + 5i$. (Write the norm in simplest form)

The norm of $2 + 5i$ is $2^2 + 5^2 = 29$

8. Write the multiplicative inverse of the complex number $2 + 5i$.

The multiplicative inverse of $2 + 5i$ is $\frac{2 - 5i}{29}$

9. Use your answer to ~~Question 7~~ Question 8 to perform the indicated division.

$$(3 + 4i) \div (2 + 5i)$$

$$(3 + 4i) \div (2 + 5i) = (3 + 4i) \left(\frac{2 - 5i}{29} \right) = \left(\frac{1}{29} \right) (3 + 4i)(2 - 5i) = \left(\frac{1}{29} \right) (6 - 15i + 8i - 20i^2)$$

$$= \left(\frac{1}{29} \right) (26 - 7i)$$

10. Use your answer to ~~Question 7~~ Question 8 to solve the equation $(2 + 5i)x = 3$.

Multiply both sides by $\frac{2 - 5i}{29}$ to obtain $x = (3) \frac{2 - 5i}{29} = \frac{6}{29} - \frac{15}{29}i$

The solution set is $\left\{ \frac{6}{29} - \frac{15}{29}i \right\}$