

ALGEBRA 2 - WARM-UP

$$r = 2 + i \quad s = 3 - 4i$$

1.) ADDITIVE INVERSE OF s ?

1.)
$$\frac{-3 + 4i}{1}$$

2.) MULTIPLICATIVE INVERSE OF r ?

$$\frac{1}{2+i} \cdot \frac{2-i}{2-i} = \frac{2-i}{4-i^2} = \frac{2-i}{5}$$

2.)
$$\frac{\frac{2}{5} - \frac{1}{5}i}{1}$$

3.) CONJUGATE OF s ?

3.)
$$\frac{3 + 4i}{1}$$

4.) r^2 $(2+i)(2+i) = 4 + 4i + i^2$

4.)
$$\frac{3 + 4i}{1}$$

5.) $s \div r$ $\frac{3-4i}{2+i} \cdot \frac{2-i}{2-i} =$

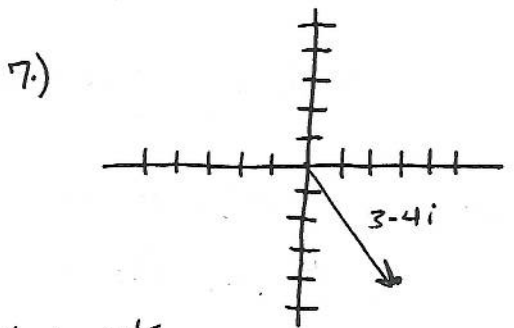
$$\frac{6 - 3i - 8i + 4i^2}{4 - i^2} = \frac{-2 - 11i}{5}$$

5.)
$$\frac{\frac{2}{5} - \frac{11}{5}i}{1}$$

6.) $|r| = \sqrt{2^2 + 1^2}$

6.)
$$\frac{\sqrt{5}}{1}$$

7.) Graph the vector that represents s



Simplify each expression. Show all work AND WRITE ANSWERS IN STANDARD FORM

8.) $(4-2i) - (-3+i) + (-2+3i) - 4i^2$
 $4 - 2i + 3 - i - 2 + 3i + 4$

8.)
$$\frac{9}{1}$$

9.) $\sqrt{-5} \cdot \sqrt{-10}$
 $\sqrt{-1} \sqrt{5} \cdot \sqrt{-1} \sqrt{10} = -1 \sqrt{50} = -\sqrt{25} \sqrt{2} = -5\sqrt{2}$

9.)
$$\frac{-5\sqrt{2}}{1}$$

$$10.) \frac{\sqrt{-20}}{\sqrt{-5}} = \frac{\sqrt{1} \sqrt{20}}{\sqrt{1} \sqrt{5}} = \sqrt{\frac{20}{5}} = \sqrt{4} = 2 \quad 10.) \underline{2}$$

$$11.) i^8 \cdot i^3 \cdot i^5 \cdot i^2 = i^{18} = i^2 = -1 \quad 11.) \underline{-1}$$

$$12.) \frac{3-4i}{2i} \cdot \frac{i}{i} = \frac{3i-4i^2}{2i^2} = \frac{4-3i}{-2} = -2 + \frac{3}{2}i \quad 12.) \underline{-2 + \frac{3}{2}i}$$

$$13.) (-4+5i)(3-2i) = -12+8i+15i-10i^2 = -2+23i \quad 13.) \underline{-2+23i}$$

$$14.) 2i^2(3+4i) - i^2(1-7i) \\ 6i^2 + 8i^3 - i^2 + 7i^3 \\ 5i^2 + 15i^3 = -5 + (-15i) \quad 14.) \underline{-5-15i}$$

$$15.) \sqrt{-16} + \sqrt{36} - \sqrt{-4} \\ \sqrt{-1} \sqrt{16} + 6 - \sqrt{-1} \sqrt{4} = 4i + 6 - 2i = 6 + 2i \quad 15.) \underline{6+2i}$$

Fill in the blanks:

16.) Complex numbers consists of all sums $a + bi$, where a and b are real numbers and i is the imaginary unit

17.) Any complex number and its additive inverse results in the sum of $0 + 0i$

18.) Any complex number and its multiplicative inverse results in the multiplicative identity $1 + 0i$

19.) Standard form of 13 is $13 + 0i$ and standard form of $2i$ is $0 + 2i$