

Name: \_\_\_\_\_

## Operations with Complex Numbers

1) If  $z_1 = 3 + 5i$  and  $z_2 = -2 + 2i$  and  $z_3 = -7 - 2i$ , find the following:

(1)  $z_1 + z_2$

(2)  $z_1 + z_2 + z_3$

(3)  $z_2 - z_3$

(4)  $z_3 - z_1$

2) If  $z_1 = 3 + 2i$ ,  $z_2 = -2 + i$  and  $z_3 = -3 - 5i$ , find the following:

(1)  $3z_1$

(2)  $2z_1 + 3z_2$

(3)  $2z_1 + z_2 + z_3$

(4)  $3z_2 - 4z_3$

3) Simplify each expression

1)  $\frac{3}{2+i}$

2)  $\frac{2}{3-2i}$

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

4)  $\frac{1-2i}{5+3i}$

5)  $\frac{2-i}{(3+i)(3-2i)}$

6)  $\frac{3}{2-i} + \frac{1}{3+2i}$