

Dividing Complex Numbers:

Multiply by conjugate of denominator and simplify

$a+bi \rightarrow a-bi$
 $a-bi \rightarrow a+bi$

Simplify.

1) $\frac{5i}{5-i} \left(\frac{5+i}{5+i} \right)$

2) $\frac{-5+8i}{1+8i}$

$$\frac{25i + 5i^2}{25 - i^2} = \frac{25i - 5}{26} = \frac{-5}{26} + \frac{25i}{26}$$

	5	i
5	25	5i
-i	-5i	-i ²

$$2) \frac{-5+8i}{1+8i} \left(\frac{1-8i}{1-8i} \right) = \frac{-5+40i+8i-64i^2}{1-64i^2} = \boxed{\frac{59}{65} + \frac{48i}{65}}$$



$$\frac{-5+48i+64}{1+64} = \frac{59+48i}{65}$$

$$3) \frac{9}{-7-i}$$

$$\frac{-63}{50} + \frac{9i}{50}$$

$$4) \frac{-5+9i}{5-10i}$$

$$\frac{-23}{25} - \frac{i}{25}$$

12.8 Practice

$$28) \frac{1}{2} - \frac{5i}{4}$$

$$29) \frac{3}{5} - \frac{6i}{5}$$

$$30) \frac{18}{25} + \frac{i}{25}$$

$$31) \frac{35}{29} + \frac{14i}{29}$$

*No i in denom!