Complex Numbers

To divide complex numbers

1.) Multiply the top & bottom by a complex number
   a. If the denominator is of the form bi, you can use just i.
   b. If the denominator is of the form a + bi, use its conjugate, a – bi.
2.) Simplify
3.) Rewrite in the form c + di.

Examples:

$$\frac{6+12i}{3i} \rightarrow \frac{6+12i}{3i} * \frac{i}{i} \rightarrow \frac{(6+12i)i}{(3i)i} \rightarrow \frac{6i+12i^2}{3i^2} \rightarrow$$

◊ $$\frac{6i-12}{-3} \rightarrow \frac{6i}{-3} + \frac{-12}{-3} \rightarrow -2i+4 \rightarrow 4-2i$$

$$\frac{8+6i}{-5-i} \xrightarrow{conjugate(-5+i)} \frac{8+6i}{-5-i} * \frac{-5+i}{-5+i} \rightarrow$$

$$\frac{(8+6i)(-5+i)}{(-5-i)(-5+i)} \rightarrow \frac{-40-6+(-30+8)i}{25+1} \rightarrow$$

◊ $$\rightarrow \frac{-46-22i}{26} \rightarrow -\frac{46}{26} - \frac{22}{26}i \rightarrow -\frac{23}{13} - \frac{11}{13}i$$