9/28/15 "By failing to prepare, you are preparing to fail" -Ben Franklin

HW: Text page 216 # 42-60 even
Test 2 Wednesday 10/7

AIM: How do we divide complex numbers?

Do Now: rationalize the denominator.

$$\frac{2}{2-\sqrt{3}}\cdot\frac{(2+\sqrt{3})}{(2+\sqrt{3})} = \frac{4+2\sqrt{3}}{4+2\sqrt{3}-2\sqrt{3}-3} = \frac{4+2\sqrt{3}}{1}$$

Dividing complex numbers is done similar to rationalizing the denominator

- multiply both numerator and denominator by the conjugate of the denominator
- simplify if possible

3) $\frac{2+3i}{1+2i}\cdot\frac{(1-2i)}{(1-2i)} = \frac{2-4i+3i-6i^2}{1-2i+2i-4i^2}$

$= \frac{2-i+6}{1+4} = \frac{8-i}{5}$

4) $\frac{5+10i}{1-2i}\cdot\frac{(1+2i)}{(1+2i)} = \frac{5+10i+10i+20i^2}{1+2i-2i-4i^2} = \frac{-15+20i}{5} = \frac{-3+4i}{1}$

5) $\frac{10-5i}{2+6i}\cdot\frac{(2-6i)}{(2-6i)} = \frac{20-60i+10i+30i^2}{4-12i+12i-36i^2} = \frac{-10-70i}{40}$

$\frac{-1-7i}{4}$ ← $= \frac{-1-7i}{\frac{40}{4}}$

6) $\frac{1}{(a+bi)(a-bi)}\cdot\frac{(a-bi)}{(a-bi)} = \frac{a-bi}{a^2-abi+abi-b^2i^2}$

$= \frac{a-bi}{a^2+b^2}$

7) What is the multiplicative Inverse of $3+2i$?

$\frac{1}{(3+2i)(3-2i)}\cdot\frac{(3-2i)}{(3-2i)} = \frac{3-2i}{9-6i+6i-4i^2} = \frac{3-2i}{13}$

8) $\frac{1}{4-i} = \frac{4+i}{17}$