Math 3 **4.5 Writing Polynomial Equations** Unit 4

*SWBAT write polynomial equations with given real and complex roots.*

**Example 1:** Write the polynomial function with roots at 7 and -2.

**Writing a Polynomial with Real Given Roots**

1. Set the roots equal to x
2. Set the equation equal to zero
3. Multiply factors together (using box or FOIL)
4. Simplify into standard form.

**Example 2:** Write the polynomial function with roots at 4, -2, and 

**You Try!** Write the polynomial function with roots at 0, 9, and 

**Writing a Polynomial with Imaginary Given Roots**

1. Set the imaginary roots equal to x
2. Set the equation equal to zero
3. Square both sides of the equation. This eliminates the imaginary number.
4. Set equation equal to zero.
5. Multiply factors together (using box or FOIL)
6. Simplify into standard form.

**Example 4:** Write a polynomial function with roots at 5 and ±3i.

**You Try!** Write a cubic function with zeros at -7 and ±2i.

**Example 5:** Write a cubic equation with roots at and 

**Writing a Polynomial with Complex Given Roots**

1. Set the complex roots equal to x
2. Get the imaginary number by itself
3. Square both sides of the equation to eliminate the imaginary number.

\*\*\*Remember to FOIL or box the real #s

1. Set equation equal to zero.
2. Multiply factors together (using box or FOIL)
3. Simplify into standard form.

**You Try!** Write a cubic equation with roots at and 

**Practice:** Complete the following problems in class for credit. Write a polynomial function with the given roots.

1. and 5
2. -4 and ±2i
3. 0 and 
4. and 