Station 1

Factor the following polynomials:

1. $x^{3}+64$
2. $x^{3}-27$
3. $125x^{3}+8$
4. $512x^{3}-729$
5. $64x^{3}+343y^{3}$
6. $1000x^{3}-y^{3}$

Station 3

Factor AND solve the following polynomials.

1) $x^{3}+125=0$

2) $27x^{3}-64=0$

Station 2

Find the product of the following polynomials. Then classify the product by degree and number of terms and classify the end behavior using proper notation.

1) $x(x+2)(x-4)^{2}$

2) $-x^{2}(x+3)(x-2)^{2}$

Station 4

1) For the following polynomial: (a) state the zeros, (b) determine any multiplicities, (c) sketch a graph of the polynomial.

$$y=x^{2}(x+4)(x+1)^{3}(x-2)^{2}$$

2) For the following polynomial: (a) state the zeros, (b) determine any multiplicities, (c) sketch a graph of the polynomial.

$$y=x^{4}-6x^{3}+9x^{2}$$

3) Sketch the graph of a polynomial that satisfies the following constraints:

* Negative odd
* Zero at (-3, 0) with multiplicity of 2
* Zero at (0, 0) with multiplicity of 3
* Zero at (5, 0) with multiplicity of 2

Station 5

Factor and solve the following polynomials:

1. $x^{3}-6x^{2}+8=0$
2. $12x^{3}+2x^{2}-4=0$
3. $x^{3}-8=0$

Station 6

1) Decide whether $x-3$ is a factor of $2x^{3}-3x^{2}-19x+30$. Explain your reasoning using complete sentences.

2) Determine the quotient of the following polynomials. Then determine if the divisor is a factor of the dividend and explain your reasoning.

$$(2x^{3}+7x^{2}+2x+9)÷(2x+3)$$

Station 7

Factor and solve the following polynomials:

1) $x^{3}-1=0$

2) $8x^{3}+27=0$

Station 8

State the following equations or patterns. Try to do so *without* looking at your notes.

1) Quadratic Formula

2) Definition of *i*

3) Sum of Cubes

4) Difference of Cubes

5) Give an example of a polynomial that you could factor using the sum of cubes and factor it.

6) Give an example of a polynomial that you could factor using the difference of cubes and factor it.