**GUIDED NOTES – Sums/Differences of Cubes & Quadratic Form**

Factoring Polynomial Expressions Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_

**Objective:** I can factor polynomial expressions applying a variety of methods and/or combinations.

**Quad form** is helpful when a trinomial isn’t a quadratic, but can be factored like one. We rewrite each polynomial as a trinomial, **au2 + bu + c (where u = x2)** then factor like a standard trinomial.

**EXAMPLES:**

x4 – 9x2 + 14 2x4 – 4x2 – 16 3x4 – 11x2 + 10

**Solve Quad Form**

x4 – 8x2 + 15 = 0 5x4 – 9x2 + 4 = 0 3x4 – x2 = 14

If factoring two terms that are perfect cubes, we can apply the sum or difference of cubes rule to help us factor.

**Sum or Difference of Cubes**

*a3 + b3 = (a + b)(a2 – ab + b2)*

***OR***

*a3 – b3 = (a – b)(a2 + ab + b2)*

1) Make two sets of parenthesis and put the cube root of each term in the first one and keep the sign

2) Now work just with the first parenthesis to fill in the second set of parenthesis:

a) Square first term

b) Multiply two terms and change the sign

c) Square last term, using a positive sign

**EXAMPLES:** Factor using the sum and difference of cubes formulas

a) x3 + 8 b) x3 + 27

c) x3 – 64 d) 125x3 – 8

e) 16x3 + 250

**To Solve Sums/Differences of Cubes:**

Factor sum/difference of cubes

Set each () = 0

Solve. May have to use quadratic formula.

**Examples:**

x3 + 8 = 0 16x3 + 250 = 0