**Algebra II Name­­­­­­­­­­­­­­­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| ***1st Semester Exam Study Guide*** | ***Units 1 – 4B*** |
| 1. Simplify $\left(4x\right)^{-2}∙4x^{-4}$
 | 1. Simplify $\left(\frac{8x^{3}y^{-3} }{4x^{-3}y^{2}} \right)^{-3}$
 |
| 1. Simplify $(\sqrt[3]{64})^{2}$
 | 1. Simplify $8^{\frac{1}{3}}∙8^{\frac{-2}{3}}$
 |
| 1. Simplify$9^{\frac{1}{2}}∙9^{2}$
 | 1. Simplify
 |
| 1. Simplify (2 + 3i) + (4 – 5i) – (-7 – 3i)
 | 1. Simplify
 |
| 1. Simplify
 | 1. Factor 16x4 – 81
 |
| 1. Multiply (-3x4 + x2 – 1)(5x2 + 4)
 | 1. Divide (x3 + 6x2 - 5x + 20) ÷ (x + 5)
 |
| 1. Add (14x3 + 8x2 – 8x – 19) + (18x2 + 5x – 14)
 | 1. Subtract (12x2 – 9x – 15) – (3x3 + 7x2 + 8x + 10)
 |
| 1. Find the degree of the polynomial:

5x3 + 2x2 – 5x4 + 13 – 2x | 1. Find the polynomial function with the zeros of 1, -2, and 3.
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| 1. Approximate the solutions using the graph:

 | 1. Given the graph, what is true about the degree and leading coefficient?

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| 1. What are the possible rational roots for:

3x3 + 12x2 + 3x - 18 = 0 | 1. Add (10x4 + 2x3 + 4x2 + 4) + (5x3 – 13x + 8)
 |
| 1. Add
 | 1. Divide
 |
| 1. Multiply
 | 1. Add
 |
| 1. State the number of solutions for:
 | 1. When Scott and his younger brother Levi work together, they can remove snow from a driveway in 40 minutes. But if Scott were working alone, he could do the same job in half the time it would take Levi to do it alone. How long would it take Levi to remove the snow from the driveway if he were working by himself? Assume the rate at which each brother works is not affected by working together.
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| 1. Graph the following function: $f\left(x\right)= \frac{5x+3}{x+1}$
 | 1. Find the vertical asymptotes:

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| 1. When graphing a rational function, at the value where the function is undefined, what will you see there?
 | 1. Find the vertical and horizontal asymptotes:

$$f\left(x\right)= \frac{x+1}{x+3}$$ |