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

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| ***Semester Exam Study Guide*** | ***Units 4 – 7*** |
| 1. Add
 | 1. Divide
 |
| 1. Multiply
 | 1. Add
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| 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:

$$f\left(x\right)= \frac{x+1}{x+3}$$ |
| 1. Find the x-intercept for $f\left(x\right)=1+\sqrt{x-3}$
 | 1. Find the y-intercept for $f\left(x\right)=2+\sqrt{x+4}$
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| 1. Find the range for $f\left(x\right)=1+\sqrt{x}$
 | 1. Solve: $3=\sqrt{2x+1}$
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| 1. Solve: $\sqrt{2x-2}=x-6$
 | 1. $f\left(x\right)=2(0.8)^{x}$What is the range?
 |
| 1. $f\left(x\right)=2(0.8)^{x}$What is the asymptote?
 | 1. $f\left(x\right)=2(0.8)^{x}$What is the end behavior?
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| 1. $f\left(x\right)=2(0.8)^{x}$Is the function growth or decay?
 | 1. In the year 2000, a city had a population of 225,000 and was growing at a rate of 2% per year. If the growth rate remains constant, what will be the population in 2025?
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| 1. Solve: $log\_{x}9=3$
 | 1. Evaluate: $log\_{6}12$
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| 1. Expand: $log\_{6}\frac{2a^{6}}{3b^{2}}$
 | 1. Solve: $log\_{2}\left(x+4\right)=4$
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| 1. John invests $2000 in an account that earns 3.5% interest compounded continuously. How much money will be in the account in 10 years?

 $(A=Pe^{rt})$ | 1. 12 14 15 15 16 17 17 19 23 25

What is the mean of the data set? |
| 1. 12 14 15 15 16 17 17 19 23 25

What is the upper quartile of the data set? | 1. 12 14 15 15 16 17 17 19 23 25

What is the interquartile range? |
| 1. A class took a test and the scores were normally distributed, with a mean of 72 and a standard deviation of 3. What percentage of the class scored above 75?
 | 1. If 25 out of 32 Algebra 2 students in a random sample passed a test, what is the best estimate for the number who passed the same test out of the total 192 Algebra 2 students?
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| 1. For a research project at your school, your team selects 5 classrooms at random and surveys some of the students in each class. What type of sampling is this?
 | 1. 15 out of 62 students surveyed responded that they were in favor of a school uniform. Find the **sample proportion** for this situation.
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| 1. 9 marbles out of 12 were red when drawn randomly from a bag. Find the **standard error** for the sample proportion of red marbles in the bag.
 | 1. In a random sample of 55 students, 28 said they listen to rock music. Estimate a 95% **confidence interval** for the proportion of students who listen to rock music.
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| 1. A survey was conducted for the number of hours of sleep students at a school get each night. 255 students were surveyed, and the mean was 6.8 hours with a standard deviation of 1.1 hours. Estimate a 90% **confidence interval** for the average hours of sleep for students at that school.
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