**Solve the following (Round to the nearest hundredth :**

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**Graph the following**

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| **Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Asymptote:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Asymptote:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| 3. **Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Asymptote:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | 4. **Domain:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Range:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****Asymptote:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

**Compound and Continuously Compounded Interest**

1. Jake invests $3500 at a rate of 7% compounded continuously. When will he double his investment?

2. Trent invests $1500 in a company. In 6 years he has $4500. What was the rate of return if the investment was compounded quarterly?

3. Sabrina invests $16,000 for 3 years at an interest rate of 5%. Will she have more money if she picks an account that compounds continuously or monthly? How much more will Sabrina make?

a) Continuous Amount:

b) Monthly amount:

c) What is the better option?

d) By how much?

4. Keri invests $6,139 in a retirement account with a fixed annual interest rate compounded continuously. After 17 years, the balance reaches $8,624.97. What is the interest rate of the account?

5. Averi invests $8,589 in a retirement account with a fixed annual interest rate of 7% compounded continuously. How long will it take for the account balance to reach $21,337.85?

**Exponential Growth and Decay**

1. The formula models the population of a US state, A, in millions, t years after 2000.

a) What was the population of the state in 2000?

b) When will the population of the state reach 20.2?

2. A computer valued at $6500 depreciates at the rate of 14.3% per year.

a) Write a function that models the value of the computer.

b) Find the value of the computer after three years.

3. Ryan gets 3 cattle for Christmas. In 4 years he has 20 cattle.

a) What is the rate of growth for his cattle?

b) If he let his cattle continue to grow at this rate when will he have 200 cattle?

4. The number of mosquitoes at the beach has tripled every year since 1999. In 1999, there were 2,500 mosquitoes. Write a model for this situation. How many mosquitoes would you predict were at the beach in 2005?