Name:

MTH133

Units 3-5 – Individual Project – A

**Name:**

1) Solve algebraically. Trial and error is not an appropriate method of solution. You must show all your work.

Learn how to type math roots and fractions by clicking on the link in the assignment list. Alternately, you may type  as cuberoot(*x*) and show raising to the *n*th power as ^*n*, like *x* 3 is typed *x*^3.

 a) 

Answer:

Show your work here:

b) 

Answer:

Show your work here:

c) 

 Answer:

Show your work here:

2) Solve algebraically and check your potential solutions: 

 Answer:

Show your work here:

3) The volume of a cube is given by *V* = *s*3, where *s* is the length of a side. Find the length of a side of a cube if the volume is 800 cm3. Round the answer to three decimal places.

 Answer:

Show your work here:

4) For the following function, C computes a value, where if you add millions of dollars to the value, the result is the cost of implementing a city recycling project when *x* , as a percent (not its decimal equivalent), citizens participate.



a) Using this model, determine the cost if 60% of the citizens participate?

 Answer:

Show your work here:

b) Using this model, find the percentage of participation that can be expected if $5 million is spent on this recycling project? Set up an equation and solve algebraically. Round to the nearest whole percent.

 Answer:

Show your work here:

5) a) If , fill in the following table for *x* = 0, 1, 2, 3, 4. Round to three decimal places where necessary.

|  |  |
| --- | --- |
| ***x*** | ***y*** |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |

Show your work here:

 b) Explain why no negative values are chosen as values to substitute in for *x*.

 Answer:

1. Graph in MS Excel or other suitable web-based graphing interface and paste your graph here.

Answer:

6) The formula for calculating the amount of money returned for an initial deposit into a bank account or CD (certificate of deposit) is given by

*A* is the amount of the return.
*P* is the principal amount initially deposited.
*r* is the annual interest rate (expressed as a decimal).
*n* is the number of compound periods in one year.
*t* is the number of years.

Carry all calculations to six decimals on each intermediate step, then round the final answer to the nearest cent.

Suppose you deposit $2,000 for 5 years at a rate of 8%.

a) Calculate the return (*A*) if the bank compounds annually (*n* = 1). Round your answer to the nearest cent.

Answer:

 Show work in this space. Use ^ to indicate the power or use the Equation Editor in MS Word.

b) Calculate the return (*A*) if the bank compounds quarterly (*n* = 4). Round your answer to the nearest cent.

 Answer:

 Show work in this space:

c) If a bank compounds continuously, then the formula used is 
where *e* is a constant and equals approximately 2.7183.
Calculate *A* with continuous compounding. Round your answer to the nearest cent.

Answer:

 Show work in this space:

7) A commonly asked question is, “How long will it take to double my money?” At 8% interest rate and continuous compounding, what is the answer? Round your answer to the hundredth's place.

8) Suppose that the function  represents the percentage of inbound e-mail in the U.S. that is considered spam, where *x* is the number of years after 2000.

Carry all calculations to six decimals on each intermediate step when necessary.

a) Use this model to determine the percentage of spam in the year 2003. Round your answer to two decimals places.

Answer:

Show your work in this space:

b) Use this model to determine in how many years (to two decimal places) it will take for the percent of spam to reach 95% provided that law enforcement regarding spammers does not change.

Answer:

Show your work in this space: