Name:

MTH133

Units 3-5 – Individual Project – B

**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) a) Show the steps that you would take to solve the following algebraically: 

Show your work here:

b) What potential solution did you obtain? Explain why this is this not a solution.

Answer:

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 500 cm3. Round the answer to three decimal places.

Answer:

Show your work here:

4) Suppose that *N*=models the number of cases of an infection, in millions, of a disease *x* years from now.

a) How many cases of the infection will there be 9 years from now?

Answer:

Show your work here:

b) In how many years will there be 5 million cases?

Answer:

Show your work here

5) Consider the function.

a) Find *h*, the *x*-coordinate of the vertex of this parabola.

Answer:

Show your work here:

b) Substitute the two integers immediately to the left of *h* and the two integers immediately to the right of *h* into the function to find the corresponding *y* values. Fill in the table below. Make sure your *x*-values are in increasing order in your table.

|  |  |
| --- | --- |
| ***x*** | ***y*** |
|  |  |
|  |  |
| ***h*=\_\_** |  |
|  |  |
|  |  |

c) Use MS Excel or another web-based graphing utility to graph the function by plotting the points found in the table in part b. Read the information in the assignments list to learn more about how to graph in MS Excel.

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 $4,000 for 8 years at a rate of 7%.

a) Calculate the return (*A*) if the bank compounds annually (*n* = 1). Round your answer to the hundredth's place.

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 monthly (*n* = 12). Round your answer to the hundredth's place.

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 hundredth's place.

Answer:

Show work in this space:

7) A commonly asked question is, “How long will it take to double my money?” At 7% 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 2005. 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 90% provided that law enforcement regarding spammers does not change.

Answer:

Show your work in this space: