SI@UCF: Java Class Homework Assignment: Math Class Practice

Objective

1. Learn how to call static methods (utilizing the Math class).

Problem A: Continuous Interest (interest.java)

If an amount of money, P, in an savings account is compounded continuously at a rate of r for t years, then the amount of money resulting in that account (assuming no other deposits of withdrawals), is Pe^{rt} . Write a program that prompts the user for the amount of money they initially put in their account, their continuously compounded interest rate as a percentage and the number of years they will keep the money in the account. Output the amount of money in the account after interest as accrued. Make sure to call Math methods and use Math constants when appropriate.

Sample Run

Enter the amount of money invested. **1000** Enter the interest rate as a percentage. **5** How many years will your money be invested? **3** You will have \$1161.83 after 3 years.

(Note: You don't need to output the dollar amount to two decimals, feel free to leave it as a regular double.)

Problem B: More Continuous Interest (moreinterest.java)

For this problem, ask the user for the amount of money they are investing and the interest rate as a percentage, finally ask them how much money they would like to accrue total. (You may assume they enter a value greater than their original investment.) Your program should output the number of years it will take for them to reach their investment goal.

Sample Run

Enter the original amount of money invested. **1000** Enter the interest rate as a percentage. **5** How much money do you want to accrue total? **2000** It will take you 13.8629436112 years to accrue \$2000.

(Note: Don't worry about the number of decimal places that prints out for your final answer.)

Problem C: Minimum Distance (distance.java)

Write a program that generates three random Lattice points in the Cartesian plane with x and y coordinates in between -100 and 100, inclusive. (Note: A lattice point is a point with integer coordinates.) Have your program print out the coordinates for each of these points. Then have your program calculate the minimum distance between any two of the three points and print out this distance. Use Math class methods when appropriate.

Sample Run

Point A: (3, -18) Point B: (76, 55) Point C: (-37, 82) The smallest distance between any two points is 103.23759005.

(Note: Don't worry about the number of decimal places that prints out for your final answer.)