## Chapter 6: User-Defined Functions, problem 11, page 456 of the text book.

The following formula gives the distances between two points, $(x_1, y_1)$ and $(x_2, y_2)$ in the Cartesian plane:

$$dist = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

Given the center and a point on the circle, you can use this formula to find the radius of the circle. Write a program that prompts the user to enter the center and a point on the circle. The program should then output the circle's radius, diameter, circumference, and area. Your program must have at least the following functions:

1. `distance()`: This function takes as its parameters four numbers that represents two points in the plane and returns the distance between them.
2. `radius()`: This function takes as its parameters four numbers that represents the center and a point on the circle, calls the function `distance()` to find the radius of the circle, and returns the circle's radius.
3. `circumference()`: This function takes as its parameters a number that represents the radius of the circle, and returns the circle's circumference. (If $r$ is the radius, the circumference is $2\pi r$.)
4. `area()`: This function takes as its parameters a number that represents the radius of the circle, and returns the circle's area. (If $r$ is the radius, the area is $\pi r^2$.)

Assume that $\pi = 3.1416$.

```
user@host:~/hw/06$ ./hw06
Enter your center of the circle:  4,4
Enter a point on the circle:  7,9
distance between the points:  XX
radius of the circle:  XX
perimeter of the circle:  XX
area of the circle:  XX
```

Create a typescript output (using the command `script`) issuing the following sequence of commands.

1. `user@host:~/hw/06$ script hw06.scr`
2. `user@host:~/hw/06$ date`
3. `user@host:~/hw/06$ ls -l`
4. `user@host:~/hw/06$ make all`
   ```
   g++ -c distance.cpp -o distance.o
   g++ -c radius.cpp -o radius.o
   g++ -c circumference.cpp -o circumference.o
   g++ -c area.cpp -o area.o
   g++ hw06.cpp -o hw06 distance.o radius.o circumference.o area.o
   ```
5. `user@host:~/hw/06$ ./hw06`
   *... interact with the program as shown above*
6. `user@host:~/hw/06$ ctl-d` // hold down control and toggle `d`
   `Script done, output file is hw06.scr`
7. `user@host:~/hw/06$ tar cvf hw06.tar Makefile hw06.scr hw06.h hw06.cpp distance.cpp radius.cpp circumference.cpp area.cpp`

Check this assigment again before you submit it as I am planning to add some input data points for you should test your program with.

Submit the program file `hw06.tar` to canvas by the due date on top of this page.