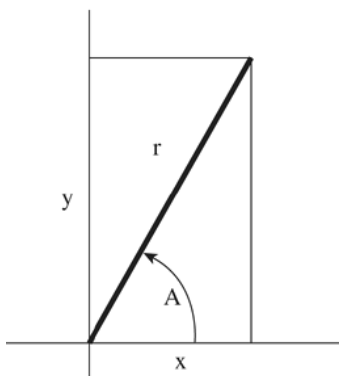


所有題目都必須是以模組化型式去完成

1) (20%) Write a function that takes as arguments the name of an array of type *int* elements, the size of an array, and a value representing the number of picks. The function then selects the indicated number of items at random from the array and prints them. No array element is to be picked more than once. Write a simple program that tests the function.

2) (20%) Polar coordinates describe a vector in terms of magnitude and the counterclockwise angle from the x-axis to the vector. Rectangular coordinates describe the same vector in terms of x and y components (see below). Write a program that reads the magnitude and angle (in degrees) of a vector and then displays the x and y components. The relevant equations are these:



$$x = r \cos A \quad y = r \sin A$$

To do the conversion, use a function that takes a structure containing the polar coordinates and returns a structure containing the rectangular coordinates

- 3)** (20%) Write a program that takes two command-line arguments. The first is a string; the second is the name of a file. The program should then search the file, printing all lines containing the string. {Hint: fgets(), strstr() }
- 4)** (40%) Write a program that opens and reads a text file and records how many times each word occurs in the file. Use a binary search tree modified to store both a word and the number of times it occurs. After the program has read the file, it offers a menu with three choices. The first is to list all the words along with the number of occurrences. The second is to let you enter a word, and the program reports how many times the word occurred in the file. The third choice is to quit.