Question 1

a)
```
11, 19, 13
12, 19, 14
12, 18, 12
13, 17, 13
14, 17, 14
```

b)
```
double y (int x, int numberOfTerms) {
    int sign = -1,
        numerator = x,
        factorial = 1,
        factor = 3,
        denominator = factor * factorial,
    double term = sign * (double)numerator/denominator,
           result = term;

    for (int i = 1; i < numberOfTerms; i++) {
        sign = -sign;
        numerator *= x * x;
        factorial *= (i+1);
        factor += 2;
        denominator = factor * factorial;
        term = sign * (double)numerator/denominator;
        result + = term;
    }

    return result;
}
```

c)
```
static final int NUMBER_OF_ROWS = 13,
                 NUMBER_OF_COLUMNS = 17;

int[][] matrix = new int[NUMBER_OF_ROWS][NUMBER_OF_COLUMNS];

-----------

boolean special (int[][] m) {
    int sumPreviousRow =0;
    for (int i = 0; i < m.length; i++) {
        int sumRow = 0;
        for (int j = 0; j < m[0].length; j++) {
            sumRow += m[i][j];
        }
        if (sumPreviousRow >= sumRow) {
            return false;
        }
        sumPreviousRow = sumRow;
    }

    return true;
}
```

d)
```
3 - 4
5 - 12
6 - 3
3 - 12
```

Question 2.

a)
```
add to the class BookStore

BookStore () {
    bookArray = new Book[MAX_NUMBER_OF_BOOKS];
    numberOfBooks = 0;
}

void add (Book book) {
    bookArray[numberOfBooks] = book;
    numberOfBooks += 1;
}
```

b) add to the class Book:

```
static final double PRICE_LIMIT_CHEAP_BOOK = 17.50; //euro

boolean cheap () {
    return price < PRICE_LIMIT_CHEAP_BOOK;
}
```

add to the class BookStore:

```
BookStore cheapBooks () {
    BookStore result = new BookStore();

    for (int i=0; i < numberOfBooks; i++) {
        if (bookArray[i].cheap()) {
            result.add(bookArray[i]);
        }
    }

    return result;
}
```

c) add to the class BookStore:

```
static final String POPULAR_GENRE = "Detective";

BookStore popularBooks () {
    return cheapBooks().genre(POPULAR_GENRE);
}
```

d) add to the class BookStore:

```
void remove (int registrationNumber) {
    for (int i = 0; i < numberOfBooks; i++) {
        if (bookArray[i].registrationNumber == registrationNumber) {
            bookArray[i] = bookArray[numberOfBooks-1];
            numberOfBooks -= 1;
            return;
        }
    }
}
```

Question 3

a)
```
int pascal (int i, int j) {
    if (j == 1) || (j == i) {
        return 1;
    }

    return pascal(i-1, j-1) + pascal(i-1, j);
}
```

b)
```
void print2 (int n) {
    if (n < 0) {
        out.printf(" %d", -1);
        return;
    }

    out.printf(" %d", n);
    print2(n-1);
    out.printf(" %d", n);
}
```

c)
```
int numberOfLetters (char[] row, int start, int end) {
    if (start > end) {
        return 0;
    }

    return (Character.isLetter(row[start]) ? 1 : 0) +
           numberOfLetters(row, start+1, end);
}
```