Study questions set #3

1. State the full terms abbreviated below and define them in your own words.
   i. API
   ii. JVM (Wednesday’s lecture)

2. Describe the distinction between static and instance variables in your own words.

3. Describe the distinction between static and instance methods in your own words.

4. Describe the distinction between public and private access in your own words.

5. Find three examples each for static method calls and instance method calls.

6. State the full console output from the following program:

```java
public class Alias {
    Alias reference;

    public Alias() {
        reference = null;
    }

    public static void main(String[] args) {
        String oneRef = new String("Hello");
        String anotherRef = new String("Hello");
        System.out.println(oneRef == anotherRef);
        System.out.println(oneRef.equals(anotherRef));

        String oneMoreRef = oneRef;
        System.out.println(oneRef == oneMoreRef);
        System.out.println(oneRef.equals(oneMoreRef));

        Alias self = new Alias();
        System.out.println(self.reference);
        self.reference = self;
        System.out.println(self.reference == self.reference.reference);
    }
}
```
// 7. Implement the following class as directed in the comments
/** MyLine
 * Represents the line y = mx + b
 * Each instance stores its own slope m and intercept b.
 */
public class MyLine {
    // i. Declare two instance variables, m and b
    // ii. Implement a constructor that initializes m and b
    // iii. Implement a method toString() that returns a string
    //      representation.
    //      For example, if m = 2 and b = 5, this method should return
    //      "2x + 5"
    //      as a string reference (and not use System.out.println)
    // iv. Implement a method that adds this MyLine and some other
    //     MyLine, and returns the sum as a new MyLine object. To add
    //     two MyLines, add the slopes, to get a new slope, and add the
    //     intercepts, to get a new intercept.
    //     This method should not modify the two original MyLines.
    public MyLine plus(MyLine other) {...}
    // v. Perform the remaining steps in the main method:
    // vi. Initialize two MyLines: y = 2x and y = 3
    // vii. Add them and save the result in a reference variable
    public static void main(String[] args) {...}
}