Scope and Hoisting Exercises

For the following exercises, don't run the code, just write down your answers.

1. **Basic Understanding of Hoisting**

   Given this code, try to think what will be the outputs.

   Sample Code:

   ```
   console.log(a); // What will be the output?
   var a = 5;

   console.log(b); // What will be the output?
   let b = 5;

   console.log(c); // What will be the output?
   const c = 5;
   ```

2. **Understanding Function Hoisting**

   Given those two functions, one with a function declaration and another one with a function expression, if we try to call both functions before they are defined, what would be the outputs?

   Sample Code:

   ```
   console.log(myFuncDecl()); // What will be the output?
   function myFuncDecl() {
       return "Hello from function declaration!";
   }

   console.log(myFuncExpr()); // What will be the output?
   var myFuncExpr = function() {
       return "Hello from function expression!";
   }
   ```

3. **Nested Scopes and Hoisting**

Given this program with a function inside another function, write what do you think would be the output in each console statement.

```
const x = "global";

function outerFunc() {
    let y = "outer";

    function innerFunc() {
        var z = "inner";
        console.log(x); // What will be the output?
        console.log(y); // What will be the output?
    }
    innerFunc();
    console.log(z); // What will be the output?
}

outerFunc();
```

4. **Combining All Concepts**

Given this code, what would be the output of the console statements and the function calls?

Sample Code:

```javascript
const a = 1;
function b() {
    const a = 10;
    c();
    return;
    function c() {
      console.log(a); // What will be the output?
    }
}
b();
console.log(a); // What will be the output of a?

foo();
function foo() {
    console.log(x); // What will be the output?
    var x = "Hello, world!";

    bar();
    function bar() {
        console.log(x); // What will be the output?
        let x = "Hello, scope!";
    }
}
```