CSCI 002 Exam #1 Review Worksheet

#1 Code Trace:

```
//Header File   *********************************
class A {
public:
	A(int = 0, int = 0);
	virtual void displayFunction() = 0;

	int x, y;
};

class B : public A {
public:
	B(int = 0, int = 0, int = 0);
	virtual void displayFunction();
private:
	int status;
};

class C : public B {
public:
	C(int = 0, int = 0);
	virtual void displayFunction();
private:
	int data1, data2;
};


//Source File   *********************************
A::A(int a, int b) {
	x = a; y = b;
}

B::B(int a, int b, int s) : A(a, b) {
	status = s;
}

void B::displayFunction() {
	if (A::x < 0 || A::x == A::y)
		cout << "C++ world!" << endl;
	else
		cout << "Java world!" << endl;
}

C::C(int a, int b) : B(a, b, 0) {
	data1 = a; data2 = b;
}

void C::displayFunction() {
	if (data2 == data1 && data1 < 0)
		cout << "Hello" << endl;
	else
		cout << "Goodbye" << endl;
}
```

```
int main(void) {

	vector<A*> myObjects;

	myObjects.push_back(new C(5, 5));
	myObjects.push_back(new B);
	myObjects.push_back(new C(-1, -1));
	myObjects.push_back(new B(10, -5));

	for (int i = 0; i < myObjects.size(); i++) {

		myObjects.at(i)->displayFunction();

	}

	return(0);
}
```

A. What is the output?

B. Please point to the polymorphism and provide a short explanation below.

C. What important task is missing here. Explain.

#2 Pointer Arithmetic

```
int digit[] = { 0,1,2,3,4,5,6,7,8,9 };

int* curPtr = digit;

cout << "line 1: " << *(curPtr + 2)*5 << endl;
cout << "line 2: " << *(curPtr + 3) + 5  << endl;
cout << "line 3: " << *(curPtr+=2) + *(curPtr + 3) << endl;
```

What is the output?

#3 Recursive Trace

```
int function(int x) {
	if (x < 1)
		return 1;
	return function(x-2)+function(x-3);
}

int main(void) {

	cout << function(10) << endl;

	return(0);
}
```

What is the output?