Midterm Exam

Attempt five of the following questions (Time Allowed: 1 hour):

Question 1: (2 Marks)

Correct the following programs:

a)

```
#include <iostream>

using namespace std;

//Midterm Exam

int main()
    int n;
    cin>> n;
    for (int i = 0, i <= n; i+ ) {
        cout << sqrt(i) << end ;
    }
    return 0;
}
```

b)

```
#include <iostream>;
using namespace std

/*Midterm Exam*/

int main() {
    int n;
    cin>> n;
    if (n % 2  = 0);
        cout << n << " is Odd';
    else
        cout << n << " is Even';
    return 0;
}
```

Question 2: (2 Marks)

Determine the output for each of the following code snippets:

a)

```
for (int i = 0; i < 5; i++) {
    for (int j = 0; j < 5; j++)
        if (i % 2 == 1 || j % 2 == 1)
            cout << "";
        else
            cout << " ";
    cout << endl;
}
```

b)

```
for (int i = 0; i < 5; i++) {
    for (int j = 0; j < 5; j++)
        if (abs(i - j) < 2)
            cout << "*";
        else
            cout << " ";
    cout << endl;
}
```

Question 3: (2 Marks)

Write a program that reads a character grade (A, B, C, D, or F) and prints the integer GPA (4, 3, 2, 1, and 0 respectively).

Question 4: (2 Marks)

Write a program that reads three angles, performs *Traverse Angle Balancing*, and prints the corrected angles.

Question 5: (2 Marks)

Write a program that reads a list of `n` numbers and prints its range. The range is the difference between the maximum and minimum values of the list.

Question 6: (2 Marks)

Write a complete program that reads the parameters of a quadratic equation and prints its real or imaginary roots.
Hint: $x_{1,2} = (-b \pm \sqrt{b^2 - 4 \cdot a \cdot c})/(2 \cdot a)$
Examples:

Input:	1 5 6	1 -4 4	1 2 2
Output:	x_1 = -2 and x_2 = -3	x_1 = x_2 = 2	x_1 = -1+1i and x_2 = -1-1i

Good Luck
Dr. Islam ElShaarawy