

**Write a Pascal program that solves quadratic equations for real and imaginary roots.**

```
program AssignmentSolveQuadraticEquation;

uses math;
var
    coeffA, coeffB, coeffC, disc, realPart, imagPart, sol1, sol2: real;
    count: integer;

function findDiscriminant(x, y, z: real): real;
begin
    findDiscriminant := (y * y) - (4 * x * z);
end;

begin
    count := 0;
    writeln('This application solves quadratic equations for real or
complex roots. ');
    writeln('Provide the input as three coefficients A B C. ');
    writeln('Enter 0 0 0 to exit. ');

    repeat
        writeln;
        writeln('Input the values for a b c: ');
        readln(coeffA, coeffB, coeffC);

        if (coeffA = 0) and (coeffB = 0) and (coeffC = 0) then
            break;

        disc := findDiscriminant(coeffA, coeffB, coeffC);

        if disc > 0 then
            begin
                sol1 := (-coeffB + sqrt(disc)) / (2 * coeffA);
                sol2 := (-coeffB - sqrt(disc)) / (2 * coeffA);
                writeln('Real roots found... ');
                writeln('Solution 1 = ', sol1:0:16);
                writeln('Solution 2 = ', sol2:0:16);
            end
        else if disc = 0 then
            begin
                sol1 := -coeffB / (2 * coeffA);
                writeln('One real root... ');
                writeln('Solution = ', sol1:0:16);
            end
        else
```

```

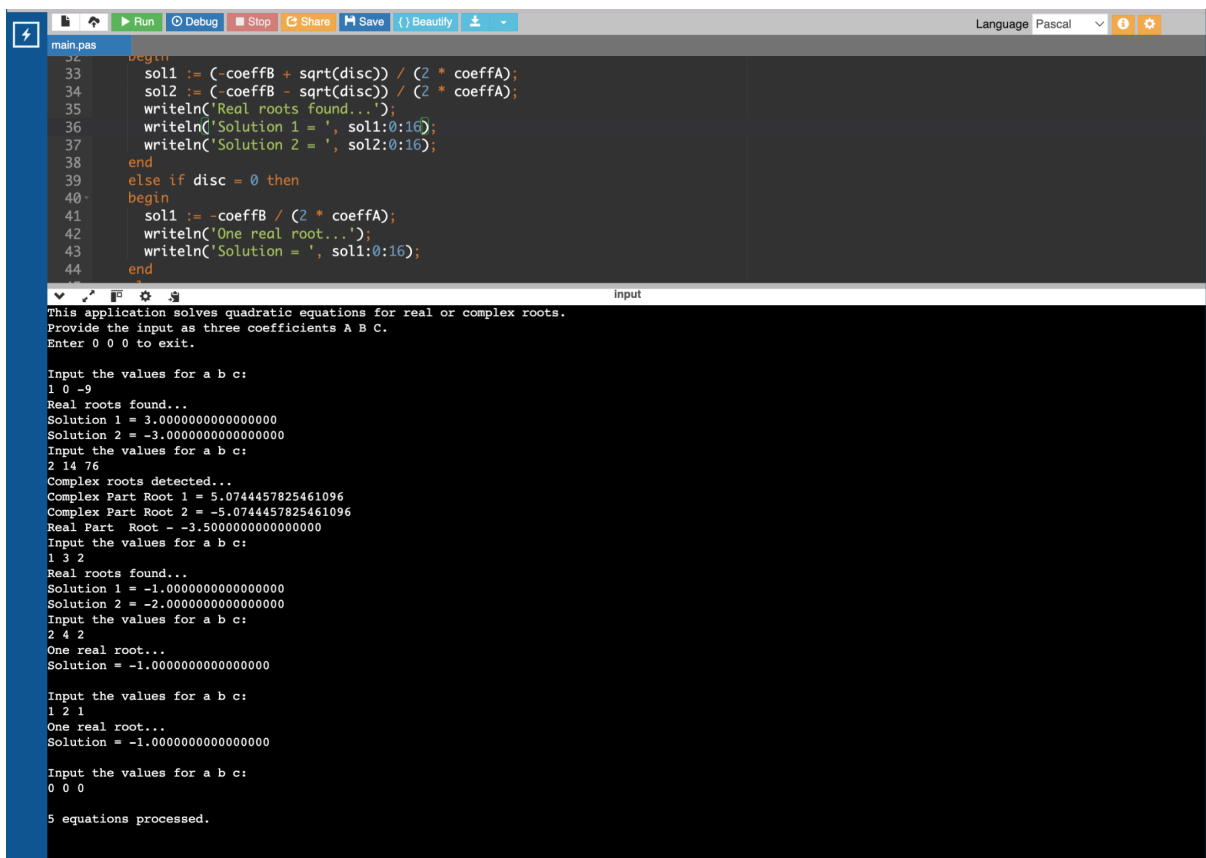
begin
    realPart := -coeffB / (2 * coeffA);
    imagPart := sqrt(-disc) / (2 * coeffA);
    writeln('Complex roots detected...');
    writeln('Complex Part Root 1 = ', imagPart:0:16);
    writeln('Complex Part Root 2 = ', -imagPart:0:16);
    writeln('Real Part Root - ', realPart:0:16)
end;

    count := count + 1;

until (coeffA = 0) and (coeffB = 0) and (coeffC = 0);

writeln;
writeln(count, ' equations processed. ');
readln;
end.

```



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main.pas
32 begin
33     sol1 := (-coeffB + sqrt(disc)) / (2 * coeffA);
34     sol2 := (-coeffB - sqrt(disc)) / (2 * coeffA);
35     writeln('Real roots found...');
36     writeln('Solution 1 = ', sol1:0:16);
37     writeln('Solution 2 = ', sol2:0:16);
38 end
39 else if disc = 0 then
40 begin
41     sol1 := -coeffB / (2 * coeffA);
42     writeln('One real root...');
43     writeln('Solution = ', sol1:0:16);
44 end

```

Input

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This application solves quadratic equations for real or complex roots.
Provide the input as three coefficients A B C.
Enter 0 0 0 to exit.

Input the values for a b c:
1 0 -9
Real roots found...
Solution 1 = 3.0000000000000000
Solution 2 = -3.0000000000000000
Input the values for a b c:
2 14 76
Complex roots detected...
Complex Part Root 1 = 5.0744457825461096
Complex Part Root 2 = -5.0744457825461096
Real Part Root - -3.5000000000000000
Input the values for a b c:
1 3 2
Real roots found...
Solution 1 = -1.0000000000000000
Solution 2 = -2.0000000000000000
Input the values for a b c:
2 4 2
One real root...
Solution = -1.0000000000000000

Input the values for a b c:
1 2 1
One real root...
Solution = -1.0000000000000000

Input the values for a b c:
0 0 0

5 equations processed.

```