```
//To find the roots of a quadratic equation
#include<iostream>
#include<cmath>
using namespace std;
int main()
{
double a,b,c,d,e,f,g,root1,root2;    //a,b,c for coefficients, d,e,f,g are used in
making                          calculations easier and root1,root2 are the solutions
cout<<"Enter the coefficient of x^2\n";    //Input the coefficient of x^2 cin>>a;
cout<<"Enter the coefficient of x\n";    //Input the coefficient of x cin>>b;
cout<<"Enter the coefficient of x^0\n";    //Input the coefficient of x^0 cin>>c;
d=pow(b,2)-4.0*a*c;              //b^2-4ac
if (d==0)                 //condition for real and equal roots
{
root1=(-b)/(2.0*a);             //root
cout<<"\nThe  equation has equal and real roots, that are, \n"<<root1<<" &"<<root1; }
else if (d>0)                //condition for real and distinct roots
{
e=sqrt(d);                 //(b^2-4ac)^1/2
root1=(-b+e)/(2*a);             //[-b+(b^2-4ac)^1/2]/(2*a)
root2=(-b-e)/(2*a);             //[-b-(b^2-4ac)^1/2]/(2*a)
cout<<"\nThe equation has distinct and real roots, that are, \n"<<root1<<" &"<<root2;
}
else if (d<0)                //condition for imaginary roots
{
d=-d;                     /*for making the value of (b^2-4ac)^1/2 as positive
                    so that its root can be taken*/
e=sqrt(d);                 //(b^2-4ac)^1/2
f=-b/(2.0*a);                //Real Part
g=e/(2.0*a);                //Imaginary part
cout<<"\nThe equation has imaginary roots, that are,\n"<<f<<"+"<<g<<"i &"<<f<<"-
"<<g<<"i\n";
}
return 0;
}
/*Sample Output
a=95
b=6
c=-8
Roots are: 0.260325 & -0.323483
*/
```

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I’m a physicist specializing in computational material science with a PhD in Physics from Friedrich-Schiller University Jena, Germany. I write efficient codes for simulating light-matter interactions at atomic scales. I like to develop Physics, DFT, and Machine Learning related apps and software from time to time. Can code in most of the popular languages. I like to share my knowledge in Physics and applications using this Blog and a YouTube channel.

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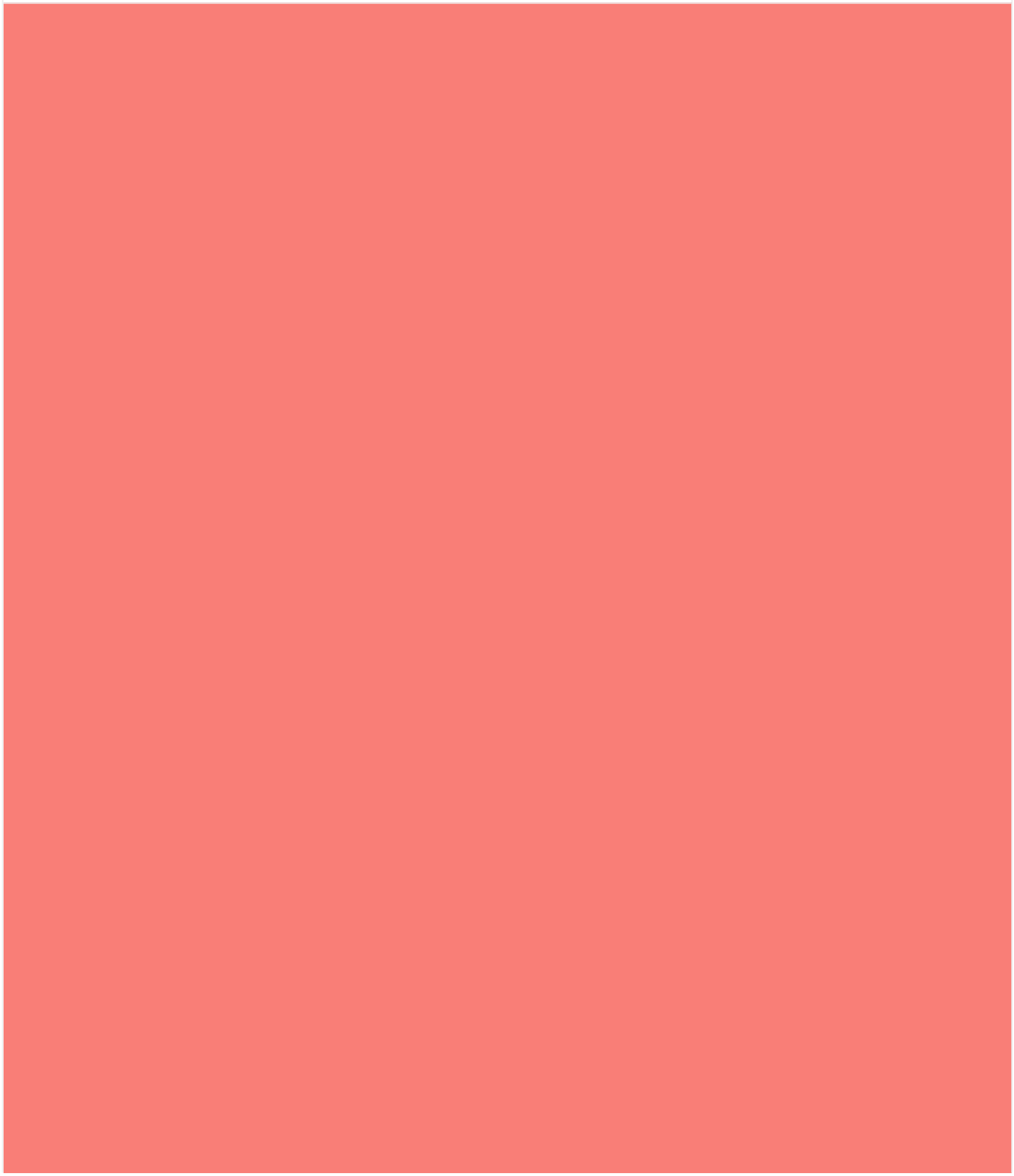

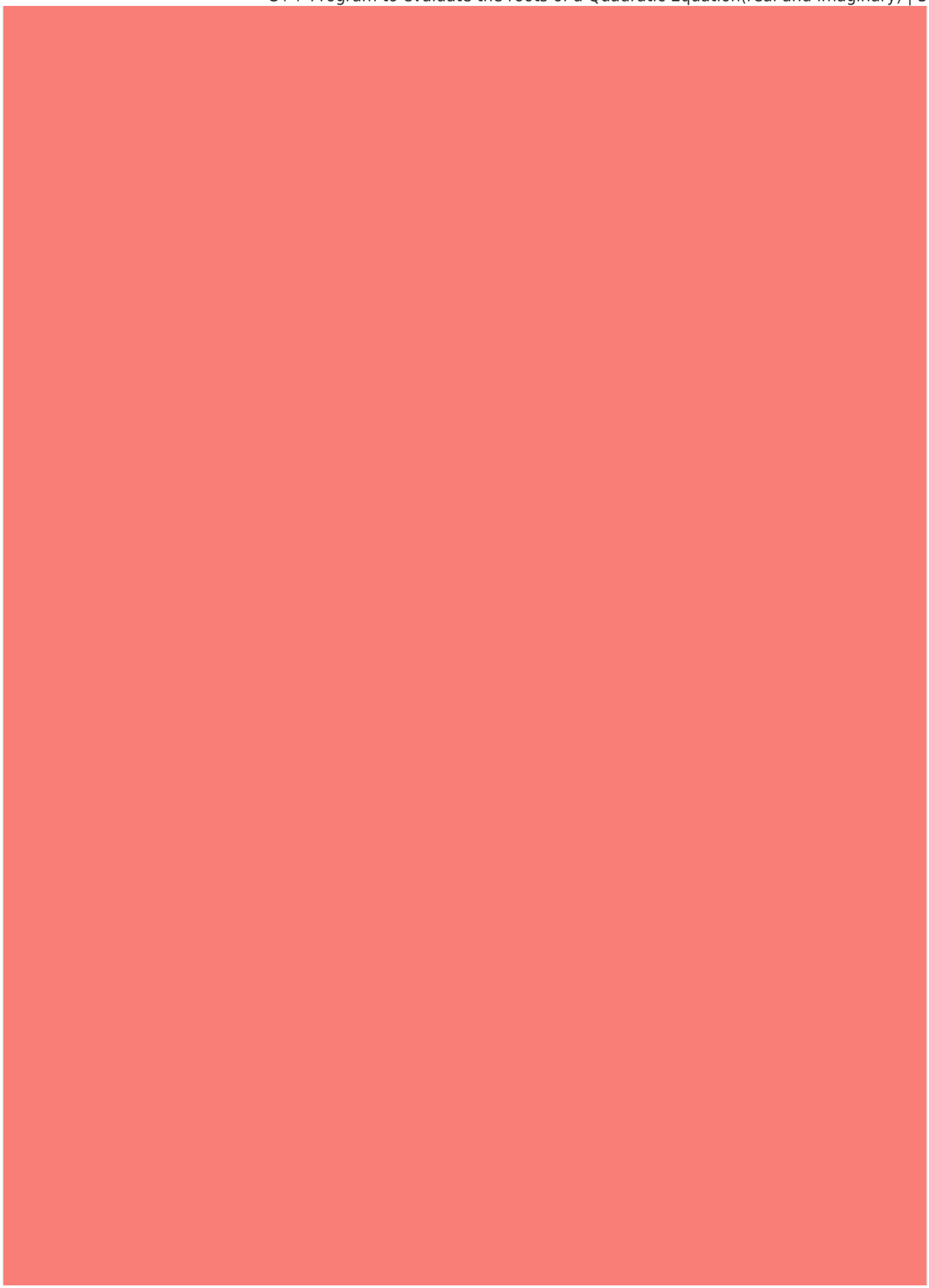

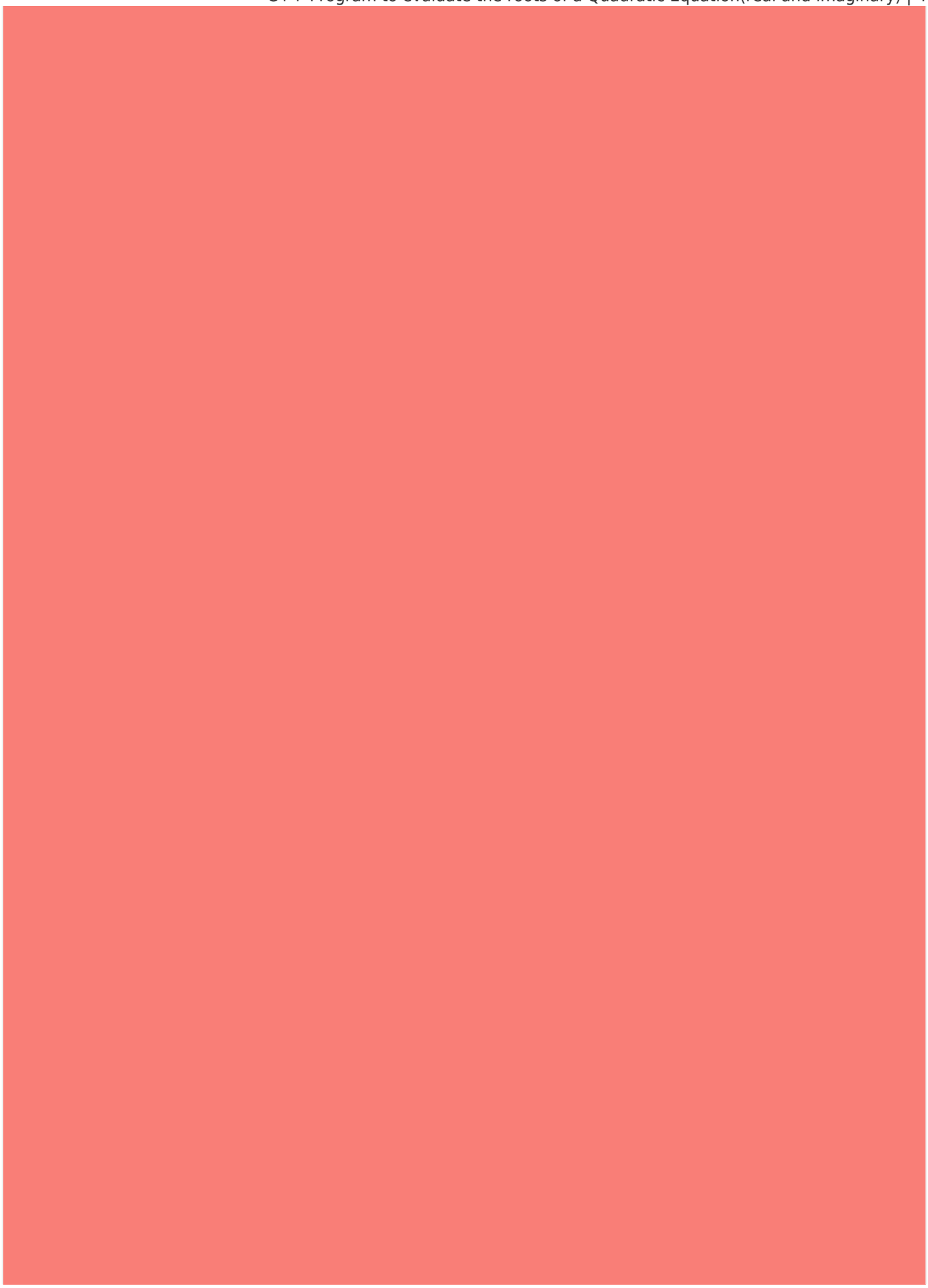

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