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BSCS – 6A

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Task: 01: Regular Falsi Method:

Code:

```
function [root] = false_position(f,a,b,e)
syms x;
root = 0;
err = Inf;
while(abs(err) > e)
    fa = double(subs(f,x,a));
    fb = double(subs(f,x,b));
    root1 = b - (fb*(a-b))/(fa - fb);
    fr = double(subs(f,x,root1));
    if(fa * fr < 0)
        b = root1;
        err = (root1-root)/root1;
        root = root1;
    elseif(fb * fr < 0)
        a = root1;
        err = (root1-root)/root1;
        root = root1;
    end
end
```

Main

```
f = input('Enter the function: ', 's');
a = input('Enter lower guess: ');
b = input('Enter upper guess: ');
e = input('Enter tolerance: ');
root = false_position(f,a,b,e);
disp(root)
```

Screenshot:

```
>> main
Enter the function: x-2*sin(x^2)
Enter lower guess: 1
Enter upper guess: 2
Enter tolerance: 0.001
```

```
    1.5112
```

Task: 02: Fixed Point Method (slide function used)

Code:

```
function [xn1] = fixed_point(g,xn,e)
syms x;
err = Inf;
while(abs(err) > e)
    xn1 = double(subs(g,x,xn));
    err = (xn1-xn)/xn1;
    xn = xn1;
end
```

Main:

```
sym x
g = 2^-x;
g = symfun(g,x);
xn = input('Enter initial guess: ');
e = input('Enter tolerance: ');
root = fixed_point(g,xn,e);
disp(root)
```

Screenshot: