

EGME 2050 Computational Methods
Spring 2022

Lab Week 11
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Problem 1: Section 32.5

```
f=@(x) (-(1.25-0.01*x)*200*exp(0.017*x)+0.45*x);
%Establishes the golden ratio
s=(1+sqrt(5))/2;
xLow=0;
xHigh=70;
err=1;
tol=1e-6;
while err>tol
    %Establishes the window size
    dx=abs(xHigh-xLow);
    %Cuts the window into 3 smaller windows
    x1=xLow+dx/s^2;
    x2=xHigh-dx/s^2;
    %Checks if the minimum is in the first window
    if f(x1)>f(x2)
        xLow=x1;
    elseif f(x1)<f(x2)
        xHigh=x2;
    %Breaks the code if there is an error
    else
        disp('Error, run the code again')
        break
    end
    %Finds the value for T and finds the error
    T=max(x1,x2);
    err=(dx/s^2);
end
```