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```
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clc
```

# Question 1

```
ans1 = zeros(3,5);
total = 0;
for i=0:4
    total = total + (.25^i)/factorial(i);
    ans1(1,i+1) = total;
    ans1(2,i+1) = exp(.25)-total;
    if i==0
        ans1(3,i+1) = 100;
    else
        ans1(3,i+1) = ((ans1(1,i+1)-ans1(1,i))/ans1(1,i+1))*100;
    end
    end
fprintf('Number of terms  Estimate      True error    APRE\n')
fprintf('%1.0f                %12.10f  %12.10f  %12.10f
\n',1,ans1(1,1),ans1(2,1),ans1(3,1))
fprintf('%1.0f                %12.10f  %12.10f  %12.10f
\n',2,ans1(1,2),ans1(2,2),ans1(3,2))
fprintf('%1.0f                %12.10f  %12.10f  %12.10f
\n',3,ans1(1,3),ans1(2,3),ans1(3,3))
fprintf('%1.0f                %12.10f  %12.10f  %12.10f
\n',4,ans1(1,4),ans1(2,4),ans1(3,4))
fprintf('%1.0f                %12.10f  %12.10f  %12.10f
\n',5,ans1(1,5),ans1(2,5),ans1(3,5))
```

```
Number of terms  Estimate      True error    APRE
1                1.0000000000  0.2840254167  100.0000000000
2                1.2500000000  0.0340254167  20.0000000000
3                1.2812500000  0.0027754167  2.4390243902
4                1.2838541667  0.0001712500  0.2028397566
5                1.2840169271  0.0000084896  0.0126758778
```

# Question 2

```
x = linspace(12,15,1000);
f2 = @(x) 80*(tan((pi/180).*x))-(9.81./
(2*40^2*cos((pi/180).*x)))*80^2+1.5-1;
```

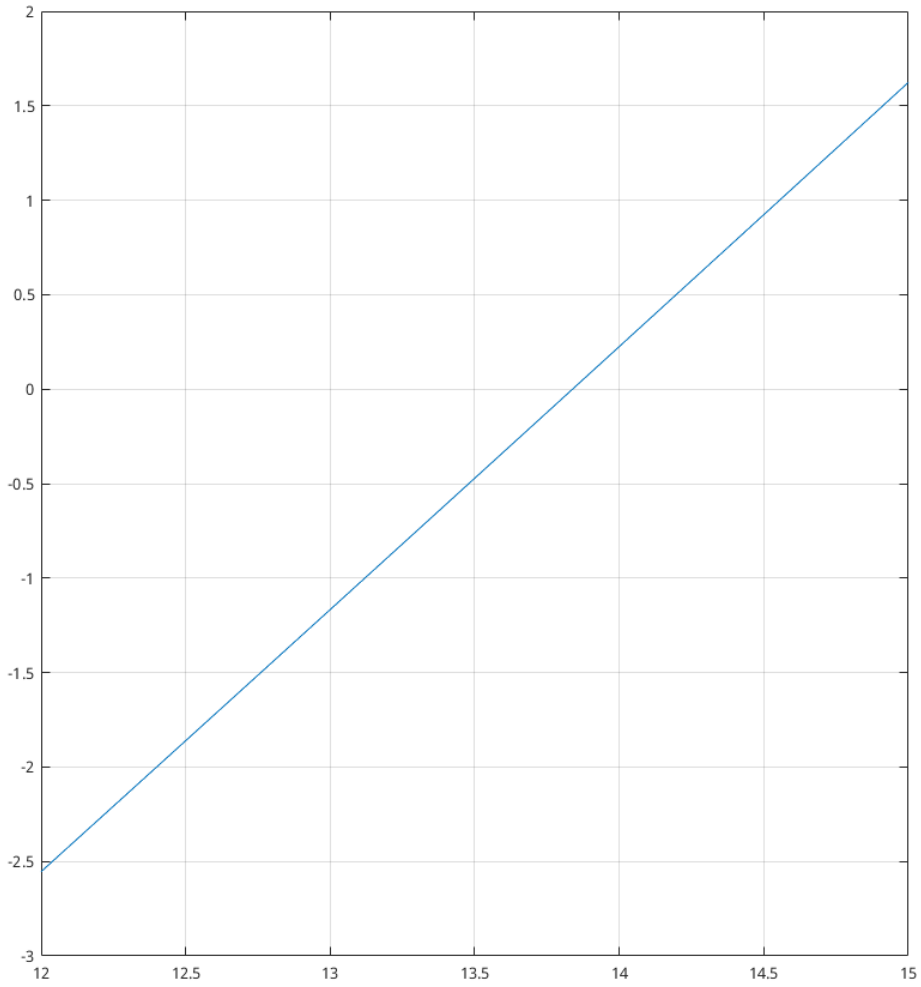
```
plot(x,f2(x)), grid on
% Bisect
Bisection = bisect(f2,10,15)
% fzero
Fzero = fzero(f2,13)
```

```
Bisection =

   13.8382


Fzero =

   13.8382
```



# Question 3

```
f3 = @(x) exp(x)-25;
% Riddler's
[ridRoot,ridFunc,ridARE,ridIter] = riddlers(f3,0,20,.00001,1000)
[biRoot,biFunc,biARE,biIter] = bisect(f3,0,20,.00001);
[falRoot,falFunc,falARE,falIter] = falsep(f3,0,20,.00001,1000);
fprintf('Riddlers Iterations  Bisect Iterations  Falsep Iterations\n')
fprintf('%2i                   %2i                 %2i
\n',ridIter,biIter,falIter)
```

```
ridRoot =

    3.2189


ridFunc =

   7.1054e-15


ridARE =

   2.9696e-07


ridIter =

     6

Riddlers Iterations  Bisect Iterations  Falsep Iterations
 6                   26                 1000
```

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