
```

h = 0.2;
x = 0:h:1;
n = length(x);
y = zeros(n,1);
y(1) = 1;
y(n) = exp(1);
diff = (exp(1)-1)/(n-1);
for i=2:n-1
    y(i)=y(i-1)+diff;
end
y1 = zeros(n,1);
y2 = zeros(n,1);
for i=2:n-1
    y1(i) = (y(i+1)-y(i-1))/(2*h);
    y2(i) = (y(i+1)-2*y(i)+y(i-1))/(h*h);
end
eps = 0.00001;
err = 1;
while err > eps
    a = zeros(n,1);
    b = zeros(n,1);
    c = zeros(n,1);
    d = zeros(n,1);

    for i = 2:n-1
        a(i) = -1*(y(i)/(h*h) + y1(i)/h);
        b(i) = 2*y(i)/(h*h) - y2(i);
        c(i) = -1*(y(i)/(h*h) - y(i)/h);
        d(i) = -1*y2(i)*y(i) + 2*y1(i)^2 - y(i)*y2(i) - (y1(i)^2 -
y(i)*y2(i));
    end

    d(2) = d(2)-a(2);
    a(2) = 0;
    d(n-1) = d(n-1)-c(n-1)*exp(1);
    c(n-1) = 0;
    del = zeros(n,1);

    % Thomas algorithm

    gamma = zeros(n,1);
    beta = zeros(n,1);
    gamma(2) = c(2)/b(2);
    beta(2) = d(2)/b(2);
    for i=3:n-1
        gamma(i) = (c(i))/(b(i)-a(i)*gamma(i-1));
        beta(i) = (d(i)- a(i)*beta(i-1))/(b(i)-a(i)*gamma(i-1));
    end
    del(n-1)=beta(n-1);
    err = abs(del(n-1)-y(n-1));
    y(n-1)=del(n-1);

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    for i=n-2:-1:2
        del(i) = beta(i) - gamma(i)*del(i+1);
        if(abs(del(i)-y(i))>err)
            err = abs(del(i)-y(i));
        end
        y(i)=del(i);
    end
    for i=2:n-1
        y1(i) = (y(i+1)-y(i-1))/(2*h);
        y2(i) = (y(i+1)-2*y(i)+y(i-1))/(h*h);
    end
end
yt = exp(x);
plot(x,yt,'r',x,y,'b');
grid on;
xlabel('X');
ylabel('Y');
legend('Actual Y', 'Calculated Y');
fprintf("Calculated Values of Y : ");
Y

```

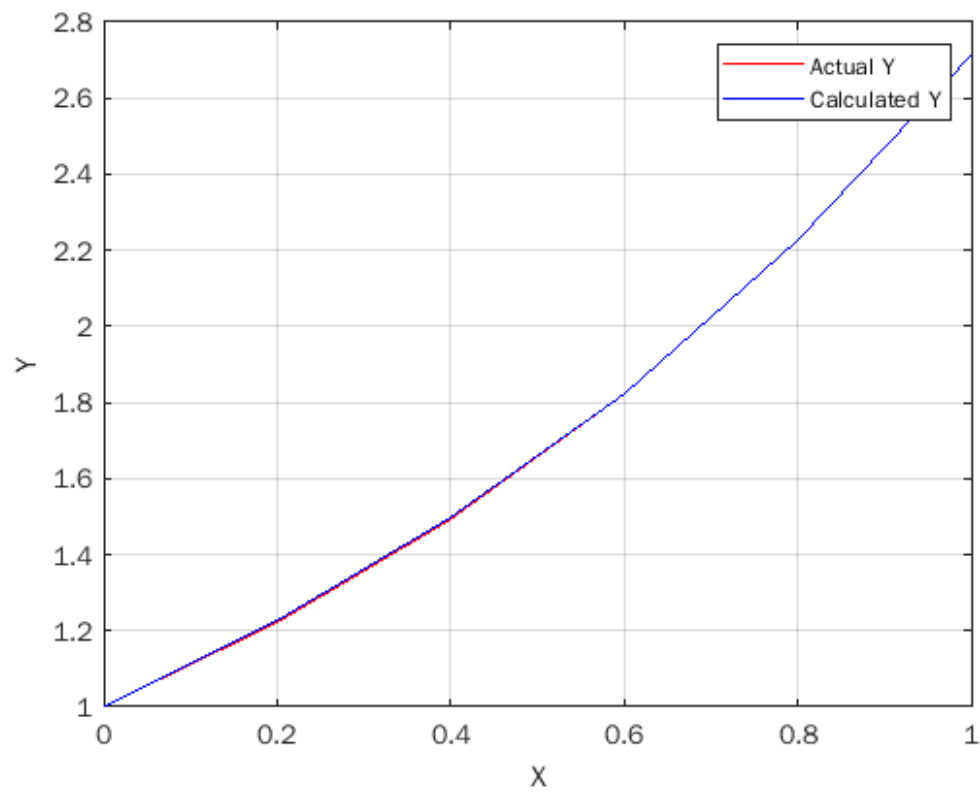
Calculated Values of Y :

Y =

```

1.0000
1.2246
1.4957
1.8256
2.2277
2.7183

```



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