## MATLAB highlighting in LaTeX documents

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## 1 MATLAB code demo

## Euler method

```
% Euler method for the ODE model
u'(x)=x^2+x-u, x in [0,1]
3 % Initial condition: u(0)=0;
% Exact solution: u(x) = -exp(-x) + x^2 - x + 1.
5 clear all; clf
6 h=0.1;
7 x=0:h:1;
                                 % function interval
8 N=length(x)-1;
9 u(1)=0;
                                 % initial value
10 fun=@(t,u) t.^2+t-u;
12 for n=1:N
       u(n+1)=u(n)+h.*fun(x(n),u(n));
14 end
ue=-exp(-x)+x.^2-x+1;
                                 % exact solution
plot(x,ue,'b-',x,u,'r+','LineWidth',1)
legend('Exact ','Numerical','location','North')
19 %title('Euler method','fontsize',12)
set(gca, 'fontsize', 12)
xlabel('x', 'fontsize', 16), ylabel('u', 'fontsize', 16, 'Rotation', 0)
```