MATLAB highlighting in LaTeX documents

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1 MATLAB code demo

Euler method

```matlab
1   % Euler method for the ODE model
2   % u'(x)=x^2+x-u, x in [0,1]
3   % Initial condition: u(0)=0 ;
4   % 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;           % RHS
11
12  for n=1:N
13      u(n+1)=u(n)+h.*fun(x(n),u(n));
14  end
15
16  ue=-exp(-x)+x.^2-x+1;          % exact solution
17  plot(x,ue,'b-',x,u,'r+','LineWidth',1)
18  legend('Exact ','Numerical','location','North')
19  %title('Euler method','fontsize',12)
20  set(gca,'fontsize',12)
21  xlabel('x','fontsize', 16), ylabel('u','fontsize',16,'Rotation',0)
```