```
 1 function [value_of_the_integral] = Integration_by_Simpsons_method_for_E_of_x(x1, x2,↙
h)
 2 % Integration_by_Simpsons_method_for_E_of_x calculats the integral between
 3 % x1 and x2 of E(x) with a constants h
 4 %   Detailed explanation goes here
 5 format long
 6 %definging constants and variabels
 7 E_0 = 2050; % [V/m]
 8 L = 0.12; % [m]
 9 a = (pi/4)^0.5; % [-]
10 b = 0.08; % [-]
11 n = 2;
12 N = ceil((x2-x1)/(n*h));
13 to_continue = true;
14 I = zeros(1,N);
15 i = 1; % iteretion number
16 lowerlimit = x1;
17 upperlimit = lowerlimit + 2*h;
18
19 %defining the function E(x)
20 syms x;
21 E = E_0*cos(((a*x)/(L))^2)*exp(-b*(x/L)^(3/2));
22 E = matlabFunction(E);
23
24 while (to_continue)
25     I(i) = (h/3)*(E(lowerlimit)+4*E(lowerlimit+h)+E(upperlimit));
26     i = i+1;
27     lowerlimit = upperlimit;
28     upperlimit = lowerlimit + 2*h;
29     if i > N
30         to_continue = false;
31     end
32 end
33 value_of_the_integral = sum(I);
34 end
35
36
```