```
clc; clear; close all;
```

Problem 1

```
format long
a = 0; b = 4; n = 10;
h = (b-a)/n;
f = @(x)(x.^3);
x = a:h:b;
y = f(x);
simp_int = h/3 * (y(1)+ y(end)+ 4*sum(y(2:2:end-1)) +
 2*sum(y(3:2:end-2)))
```

```
simp_int =

    64
```

Problem 2

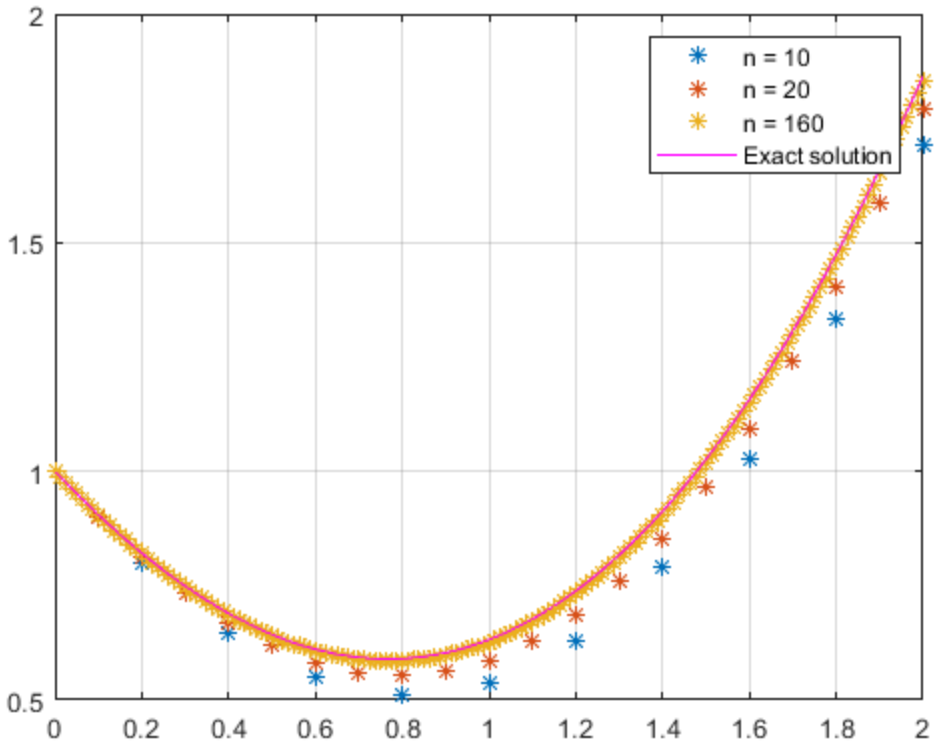
```
clear; close all;

for n = [10,20,160]
    a = 0; b = 2;     y0 = 1;
    h = (b-a)/n;
    time = a:h:b;
    y(1) = y0;
    % Euler method
        for i=1:length(time)-1
        y(i+1) = y(i) + h*(time(i)^2 - y(i));
        end
    plot(time, y, '*'); hold on
end

ytrue = @(t)(t.^2-2.*t + 2 -1./exp(t));



plot(time,ytrue(time), 'm')
grid on;
legend('n = 10','n = 20','n = 160', 'Exact solution');
```



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