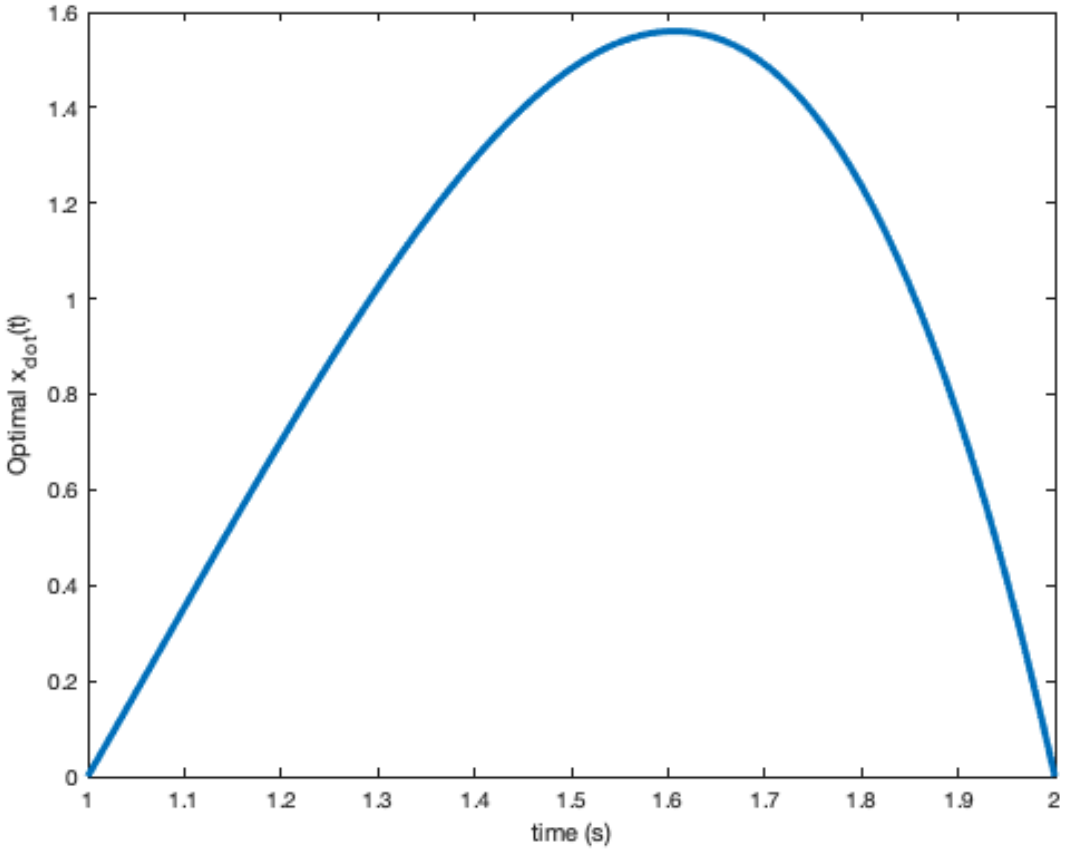
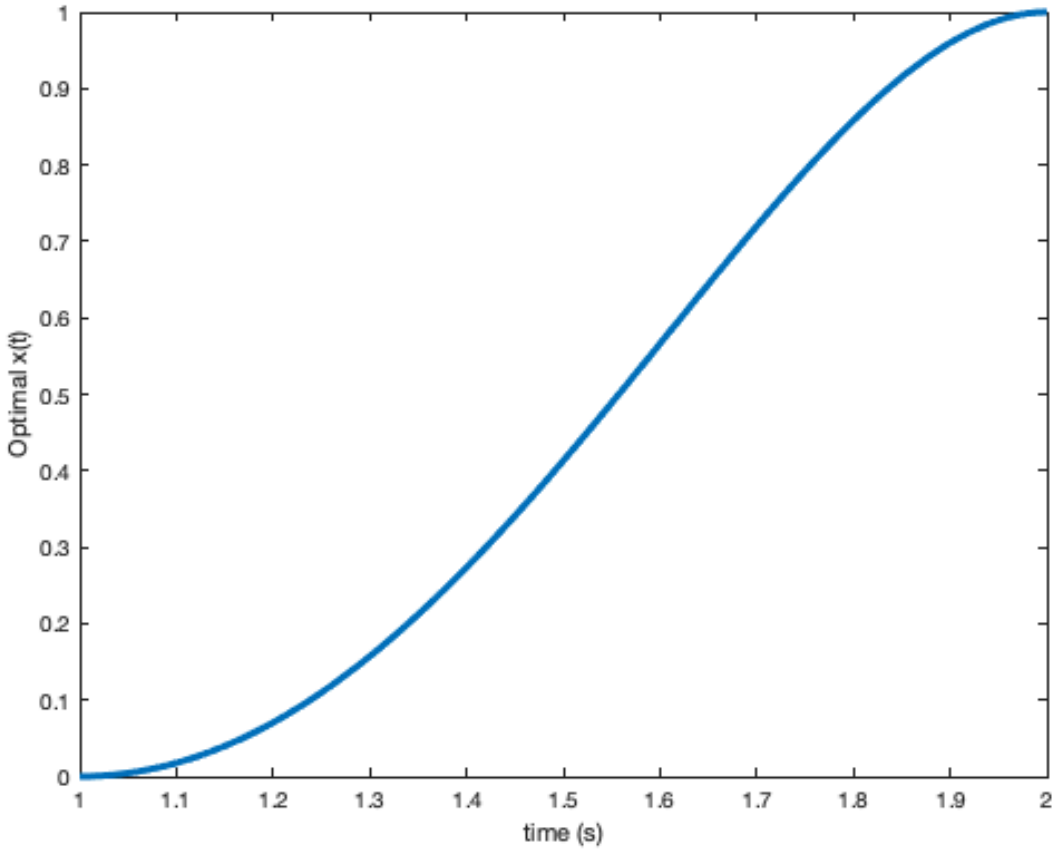
```
clc
clear
close all

syms c5 c6 c7 c8
f1 = c5 + c6 + c7;
f2 = 16*c5 + 8*c6 + c7;
f3 = c5/5 + c6/4 + c7 + c8;
f4 = 32*c5/5 + 4*c6 + 2*c7 + c8;

[c5, c6, c7, c8] = solve([f1 == 0, f2 == 0, f3 == 0, f4 == 1], [c5, c6, c7,
 c8])

t0 = 1; tf = 2; dt = 0.01;
t = t0:dt:tf;

x_dot = c5*t.^4 + c6*t.^3 + c7;
x = c5/5*t.^5 + c6/4*t.^4 + c7*t + c8;
figure(1)
plot(t, x_dot, 'LineWidth', 3)
xlabel('time (s)')
ylabel('Optimal x_d_o_t(t)')
figure(2)
plot(t, x, 'LineWidth', 3)
xlabel('time (s)')
ylabel('Optimal x(t)')
```

```
c5 =

-140/97


c6 =

300/97


c7 =

-160/97


c8 =

113/97
```


1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Optimal $x_{dot}(t)$
1
1.1
1.2
1.3
1.4
1.5
1.6
1.7
1.8
1.9
2
time (s)



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