

Assignment 18

CS374

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1 Two - Point Boundary Value Problem

$$Y'' = \frac{-2x}{1+x^2}Y' + Y + \frac{2}{1+x^2} - \ln 1+x^2$$

$$Y(x) = \ln 1+x^2$$

$$Y(0) = 0$$

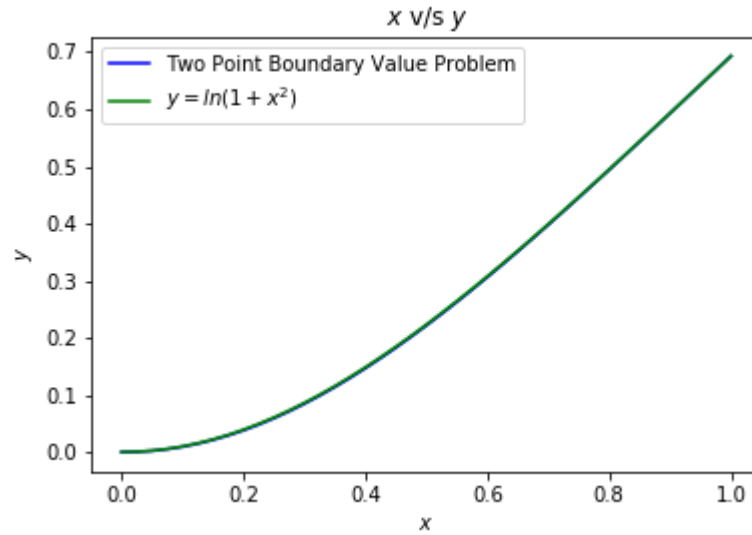
$$Y(1) = \ln 2$$

$$h = \frac{1}{40}$$

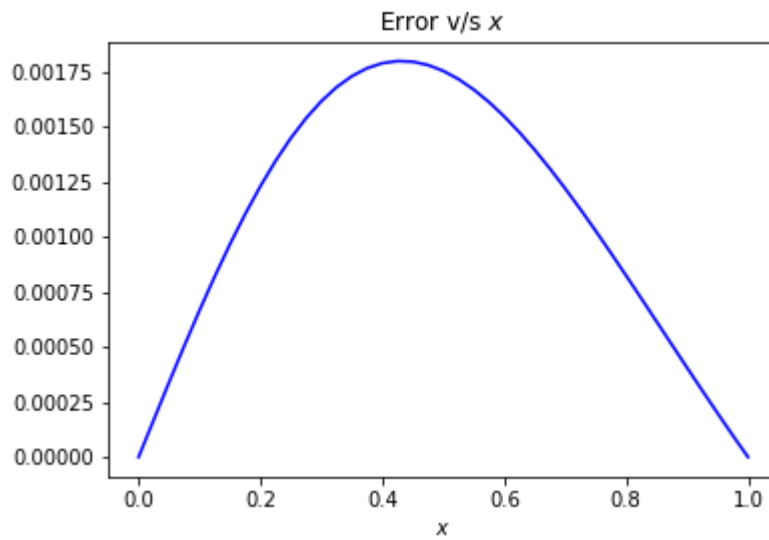
1.1 Table

x_i	y(x_i)(TwoBoundary)	y(x_i)(Original)
0.0	0.000000	0.000000
0.1	0.009283	0.009950
0.2	0.037989	0.039221
0.3	0.084560	0.086178
0.4	0.146630	0.148420
0.5	0.221388	0.223144
0.6	0.305936	0.307485
0.7	0.397555	0.398776
0.8	0.493871	0.494696
0.9	0.592921	0.593327

1.2 Graph



Plot of $Y(x)$ (original) and $Y(x)$ obtained from Two - Boundary Problem



Plot of Error between $Y(x)$ (original) and $Y(x)$ obtained from Two - Boundary Problem