Challenge Question 2, Physics 430

Send your Matlab script that solves this problem to me by email before the next class: ross_spencer@byu.edu

2. Use Matlab to solve the differential equation

\[ \frac{d^2 f}{dx^2} + \frac{2}{x} \frac{df}{dx} + \sin(x) f = \cos(x) \]

with boundary conditions

\[ \frac{df}{dx}(0) = 0 \quad f(10) = 1.5 \]

and plot your result.

Then find \( f(\pi) \) as accurately as you can. (Use a Matlab command of some kind to interpolate.)