In each of the following problems use Maple command for all operations

1 / Solve the IVP

\[ y' + 2x^{-1}y = x^{-1}\cos 2x, \quad y(\pi/2) = 0 \]

2 / Solve the IVP

\[ y' = y(2 - y), \quad y(0) = 0.01 \]

and plot the solution in the interval \([0,10]\)

3 / Solve the damped vibration problem

\[ y'' + y' + 0.5y = 0, \quad y(0) = 2, \quad y'(0) = -0.5 \]

and plot the solution in the interval \([0,12]\)

4 / Solve the following "forced vibration problems without damping"

a) Solve the IVP and plot the solution in the interval \([0,30]\)

\[ y'' + 9y = \sin 3x, \quad y(0) = 1, \quad y'(0) = 0, \]

b) Solve the IVP and plot the solution in the interval \([0,140]\)

\[ y'' + 9y = \sin(2.9x), \quad y(0) = 1, \quad y'(0) = 0 \]