WRITTEN HOMEWORK 7

MATH046 SEC030

This homework will be due on Thursday May 28th.

Question 1 Find the general solution of

$$y'' + y = \frac{1}{\cos x}$$

Question 2

$$(x^2 - 1)y'' - 2xy' + 2y = (x^2 - 1)^2$$

if two solutions to the associated homogeneous equation are x and $x^2 + 1$.

Question 3 Solve the initial value problem

$$y'' + y = x; y(1) = 0, y'(1) = 1$$

Question 4 A 20lb weight is suspended from the end of a vertical spring having a spring constant of 40 lb/ft and is allowed to reach equilibrium. It is then set into motion by stretching the spring 2 in from its equilibrium position and releasing the mass from rest. Find the position of the weight at any time t if there is no external force and no air resistance.