

Math.240, QUIZ 9

Surname & Name:

Question:

a) Find all singular points of

$$(x^3 - 7x^2 + 6x)y'' + (x^2 + 1)y' - 3y = 0 \dots\dots\dots (*).$$

The singular points are when $(x^3 - 7x^2 + 6x) = 0$ or $x = 0, x = 1, x = 6$. All other points are ordinary points.

b) Choose an ordinary point x_0 of $(*)$.

$$x_0 = -1.$$

c) Write the form of the solution of $(*)$ about x_0 .

$$y(x) = \sum_{n=0}^{\infty} a_n (x+1)^n.$$

d) Find a minimum value for the radius of convergence of a power series solution about x_0 .

$$R=1.$$