MATH 361 EXAM 3, Spring 2012

	Name:
1.	Determine the radius of convergence of the power series $\sum_{n=0}^{\infty} \frac{(-1)^n (x-5)^n}{(n^2+1)3^n}$ Ans:_____.
2.	Find the first four terms of a power series solution of $y'' + x^2 y = 0$, about $x_0 = 0$. Ans:_____.
3.	Determine a lower bound for the radius of convergence of the solutions of the differential equation: $(4 + x^2)y'' + 4xy' + 4y = 0$, about a) $x = 1$; b) $x = 2$. Ans: a)_____ b)_____.
4.	Solve the equation: $x^2 y'' - 3xy' + 4y = 0$ Ans:_____.
5.	Solve the equation: $3x^2 y'' + y = 0$ Ans:_____.

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6.	Determine and classify the singular points of the equation $x^2(2-x)^2y'' + 4xy' + 2y = 0$. Ans:_____.
7.	Solve by Laplace transforms: $y'' - y = e^{2t}$ with initial conditions $y(0) = 0$, $y'(0) = 1$. Ans:_____.
8.	Find the inverse Laplace transform of $F(s) = \dfrac{2}{(s-2)^2} + \dfrac{e^{-2s}}{s^2+9}$. Ans:_____.
9.	Find the inverse Laplace transform of $F(s) = \dfrac{s+1}{s^2+4s+13}$. Ans:_____.
10.	Solve by Laplace transform: $y'' - 2y' + 5y = \delta(t-5)$; with $y(0) = 0$, $y'(0) = 0$. Ans:_____.
	Extra space