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Math 307B,G

Quiz 1

February 8, 2008

1. Find the general solution to each of the following differential equations.

(a)  $2y'' - 3y' + y = 0$

(b)  $25y'' - 20y' + 4y = 0$

2. (a) Solve the initial value problem:  $y'' + 6y' + 13y = 0$ ,  $y(0) = 4$ ,  $y(\pi/4) = 2$ . (Note: The initial conditions both refer to  $y$ , not  $y'$ .)

(b) What is  $\lim_{t \rightarrow \infty} y(t)$ ?

*More questions on the back!!!*

3. (a) Write the complex number  $2e^{i\pi/4}$  in Cartesian form.

(b) Write the complex number  $-4i$  in polar form.

4. Find the following antiderivatives. (Hint: These should be easy.)

(a)  $\int \frac{2xe^{x^2}}{e^{x^2} + 5} dx$

(b)  $\int \frac{1}{t} \cos(\ln t) dt$

(c)  $\int \frac{x^2 - \sin(3x)}{(x^3 + \cos(3x))^2} dx$

(d)  $\int \frac{1}{t^3} e^{-1/t^2} dt$