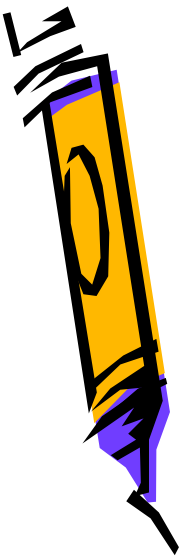
Math 204, Exam 3
December 4, 2008

There are five problems. Each problem is worth twenty points. The total exam is worth hundred points. You may use a calculator, something to write and something to erase, but nothing else. Show all work. Full credit will be given only if work is shown which fully justifies your answer. Turn off your cell phone if you have one. Do not turn this page until told to do so. This is a fifty-minute exam.

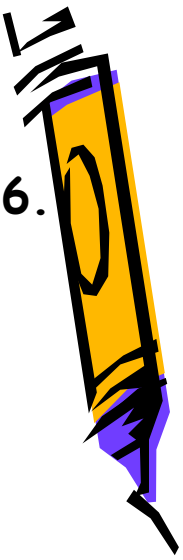
#	1	2	3	4	5	$\sum$
P						
$\sum$	20	20	20	20	20	100

Problem 1



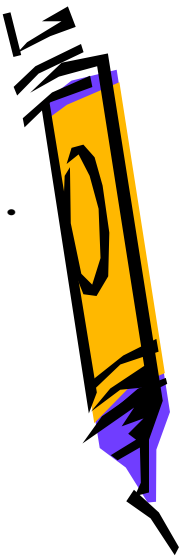
Solve the IVP $x' = \frac{1}{2}x$, $y' = x - \frac{1}{2}y$, $x(0) = 3$, $y(0) = 5$.

Problem 2



Solve the IVP $x'=2x+4y$, $y'=-x+6y$, $x(0)=-1$, $y(0)=6$.

Problem 3

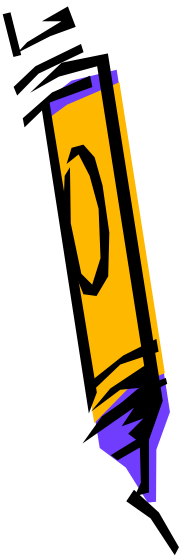


Solve the IVP $x'=6x-y$, $y'=5x+4y$, $x(0)=-2$, $y(0)=8$.

Problem 4

Use variation of parameters to find the general solution of $x'=3x-5y+e^{t/2}$, $y'=\frac{3}{4}x-y-e^{t/2}$. You may use without checking it that the homogeneous system has eigenvalues 1/2 and 3/2 with corresponding eigenvectors $(2\ \ 1)^T$ and $(10\ \ 3)^T$, respectively.

Problem 5



Solve the IVP $y'-3y=\delta(t-2)$, $y(0)=0$.