Math 107 Fall '12

Exam 3

Score: _____

Name: _____

TA's Name: ___

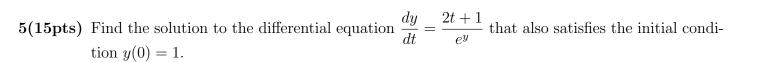
Instructions: You must show supporting work to receive full and partial credits. No text book, notes, formula sheets allowed.

1(15pts) (a) Find the first three nonzero terms for the Taylor series of the function $f(x) = \sqrt{x}$ at the point x = 1.

(b) Use the Taylor series $\ln(1+x) = \sum_{n=1}^{\infty} (-1)^{n-1} \frac{x^n}{n}$ to find the Taylor series of $x \ln(1-2x)$ at x=0.

2(10pts) Which two of the three vectors are perpendicular, $\vec{u} = \langle 1, 2, 3 \rangle$, $\vec{v} = \langle 1, 0, -2 \rangle$, $\vec{w} = \langle 2, -1, 0 \rangle$? Show work to support your answer.





6(10pts) Which is traveling faster, a car whose velocity vector is $21\vec{i} + 35\vec{j}$, or a car whose velocity if $40\vec{i}$, assuming that units are the same for both directions? Show work to support your answer.

7(15pts)	Let $\vec{u} =$	$\langle 1, 2, 3 \rangle$	and $\vec{v} = \langle$	(-1, 0, 1)

(a) Find the angle θ between the two vectors.

(b) Find the projection, $\vec{v}_{\text{parallel}},$ of vector \vec{v} on vector $\vec{u}.$

8(10pts) Find an equation for the plane which contains the point (1, 0, -2) and is perpendicular to the vector $\vec{n} = \langle 3, 2, 1 \rangle$.