Math 120 2011-2 Recitation Week 05

5	**March 12-16**	**9.7 Applications of Taylor and Maclaurin Series** **Ch. 10: Vectors and Coordinate Geometry in 3-Space** **10.1 Analytic Geometry in Three Dimensions** **10.2 Vectors**

1) Prove that $\int_0^1 \frac{\ln(1+x)}{x}\,dx = \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n^2}$ and determine how many terms should be used to approximate this sum with an error $< \frac{1}{120}$

2) Approximate $\int_0^1 \cos(x^3)\,dx$ with an error $< 5\times10^{-4}$

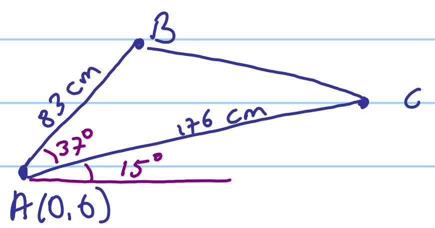
3) Find Maclaurin series of $\frac{1-e^{-2x}}{x}$ & $\ln(e+x^2)$ and find their R / I.

4) Find the area of the triangle with vertices $P(1,1,0)$, $Q(1,0,1)$ and $R(0,1,1)$.

5) Suppose that $\vec{u}\cdot(\vec{v}\times\vec{w}) = 2$. Find;

a) $(\vec{u}\times\vec{v})\cdot\vec{w}$ b) $\vec{u}\cdot(\vec{w}\times\vec{v})$

c) $\vec{v}\cdot(\vec{u}\times\vec{w})$ d) $(u\times\vec{v})\cdot\vec{v}$

6) 

First Find coordinates of each vertex, then calculate the area of $\widehat{ABC}$

(4395, 657)

7) The point $D(3,3)$ is midpoint of one of the sides of a triangle. If two vertices are at $B(1,1)$ and $C(2,4)$, find the area of the triangle.

8) Find the distance between points with polar coordinates $E(3,16°)$, $F(5,76°)$

9) Find the projection of $\vec{a} = \langle 1,2,3\rangle$ onto $\vec{b} = \langle 1,4,1\rangle$

10) Given the points $A=(1,3,7)$, $B=(7,12,22)$, $C(3,5,1)$ and $D=(15,20,4)$. Let X be point on $[AB]$ s.t. $\frac{|AX|}{|XB|} = \frac{1}{2}$ and Y be the point on $[CD]$ s.t. $\frac{|CY|}{|YD|} = \frac{2}{1}$. the Find the midpoint of $[XY]$ $(7, \frac{21}{2}, \frac{15}{2})$

11) Given the points $A(4,8)$, $B(1,3)$ and $C(5,6)$, Find the length of the altitude of the triangle ABC passing through the vertex A $(11/5)$

12) Find all values of m for which the points $A(2,3)$ and $B(-3,5)$ are placed on the two different sides of the line $2x-3y+m=0$. $(m\in(5,21))$.