MATH 253 Week 10

This does **NOT count for credit**

1. In the Maclaurin series of $f(x) = \dfrac{\ln(1+x)}{x}$, the coefficient of x^3 is:

a) $-1/3$.

b) $-1/4$.

c) $1/3$.

d) $1/4$.

e) 1.

2. The second term of the Maclaurin series of $f(x) = \sin x \cos x$ is: (**HINT:** $\sin x = x - x^3/3! + x^5/5! - x^7/7! + \ldots$)

a) $1/4x^2$.

b) $2/3x^2$.

c) $-2/3x^3$.

d) $-1/2x^3$.

e) x^2.

3. Given that $\cos x = 1 - x^2/2! + x^4/4! - x^6/6! + \ldots$, find $P_6(x)$ for $\cos(2x - \pi)$ about $x = 0$.

4.Given that $\cos x = 1 - x^2/2! + x^4/4! - x^6/6! + \ldots$, find $P_4(x)$ for $\cos^2 x$ about $x = 0$.

5. Find the first 3 non-zero terms of the Maclaurin series of $\ln(1 + \sin x)$.

6. Find the first 2 non-zero terms of the Maclaurin series of $\cos(\sin x)$.

7. Find the Maclaurin series of $\dfrac{\sin(x^2)}{x}$.

8. Find the Maclaurin series of $(\sqrt{2})^x$.