Section 11.10: Additional Problems

1) Find a MacLaurin series for these functions.

A) $f(x) = x^3 \sin(2x)$

B) $f(x) = \cos^2(x)$

C) $f(x) = \ln(3 + x)$

2) Use a Maclaurin series to approximate this integral to 4 decimal places. i.e. error < 0.00005

$$\int_0^{1/2} \frac{\ln(1+x)}{x}\, dx$$

3) Find the Taylor series of $f(x) = xe^x$ about $a = -1$

4) Find the first three nonzero terms in the Maclaurin series for $y = \sec(x)$

5) Find the 20th derivative at $x = 2$ for $f(x) = \sum_{n=0}^{\infty} \frac{2^n}{n+5} (x-2)^n$