

MA 2733

Worksheet 5 – December 3, 2012

Name _____

1. Using the Taylor formula.

(a) Let $f(x) = \cos x$. Write down a formula for $f^{(n)}(x)$. (You'll need braces notation.)

(b) Find a formula for c_n , the coefficient of x^n in the Taylor series for $f(x) = \cos x$.

(c) Letting $n = 2k$, write a power series for $\cos x$ with a single Σ sign.

2. Integrating with Taylor series

(a) Find a power series representation for xe^{x^3} .

(b) Using part (a), find a series representing $\int_0^5 xe^{x^3} dx$.

(c) If $f(x) = xe^{x^3}$, then calculate $f^{(7)}(0)$, $f^{(8)}(0)$, $f^{(9)}(0)$, and $f^{(10)}(0)$.