Math 205 April 2012 Final Exam Answers UNEDITED

1 a) 31.75 SQ. UNITS b) LOCAL MIN. AT $x=-2, x=2$; LOCAL MAX AT $x=0$

2 a) $F(x) = \frac{2}{5}x^{\frac{3}{2}} - 2x + 2x^{\frac{1}{2}} + \frac{1}{3}$ b) $F(x) = 5\tan x + x + 5$

3 a) $-\frac{1}{3}\text{Arctan}\left(\frac{\cos x}{3}\right) + C$ b) $\frac{1}{\ln 2}\ln|2^x+1| + C$ c) $-\frac{1}{5}\ln|x+4| + \frac{1}{5}\ln|x-1| + C$

4 a) 2 b) $\frac{16}{3}\ln 4 - \frac{28}{9}$

5 a) DIVERGENT b) Converges to $\frac{1}{4}$

6 a) $\frac{13}{3}$ SQ. UNITS b) $\frac{3\pi^2}{8}$ CUBIC UNITS c) $\frac{4}{3\pi}$

7 a) 0 b) $\frac{1}{3}$ c) DIVERGENT

8 a) Diverges in general b) Conditional Convergence c) Absolute Convergence

9. Interval of Convergence $1 < x < 5$

Radius of Convergence: 2

10 a) $x^2 + 2x^3 + \frac{4}{2!}x^4 + \frac{8}{3!}x^5 + \cdots\cdots$

b) $F(x) = \ln x$

11. Proof: (ASK)