DAWSON COLLEGE
MATHEMATICS DEPARTMENT

Final Examination

Mathematics 201-203-DW
Calculus II Social Science / Commerce
Instructors: C. Farnesi, I. Rajput, S. Shahabi
Date: Tuesday, December 21, 2010

1. [**5 marks**] Find if

$$, \quad = 4^{5} \quad 3^{4} \quad 2_{\backslash}$$

11. [**5 marks**] Evaluate the integral, if it converges:

$$\int_{3}^{} \frac{1}{\ln^{2}}$$

12. [**5 marks**] Verify that $= 2^{2} +$ is a solution to the differential equation

$$2 + ^{2} = 2 + ^{2} \text{”}$$

13. [**5 marks**] Use separation of variables to find the particular solution of the differential equation

$$\left(2^{3} + 3^{2}\right)' = \frac{72^{2}}{\left(2 + 1\right)^{3}}$$

subject to the initial condition $1 = 4$.

14. [**5 marks**] Find the sum of the convergent series:

$$\sum_{=2}^{} \frac{5\left(2\right)}{3^{1}}$$

15. [**15 marks**] Determine if each of the following series is convergent or divergent. State the test used.

a.

$$\sum_{=10}^{} \frac{3 + 4^{3} 18^{5}}{2^{5} 7^{2} + 10}$$

b.

$$\sum_{=1}^{} \frac{1}{2 + \sqrt{^{5}}}$$

c.

$$\sum_{=2}^{} {}^{2+1}$$

Answers

1. $= \quad ^{4} \quad ^{3} + \frac{4}{\sqrt{\ }} + 6$

2. Average Value $= 9.6395$

3. Sales $= \$\ 249\ 535.23$

4. PS $= \$\ 90\ 650$

5. 5.25

6. Area $= 36$ units^2

7. a) $\frac{1}{24} \quad ^{2} + 3 \ ^{12} \quad ^{3}$

c) convergent by integral test (since $_{2}$ $^{2+1}$ $= \frac{1}{2}$ ^{3})