**西南大学 计算机与信息科学学院**

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**《高等数学IB》课程试题 【A】卷**

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| **2018～2019学年 第2学期** | | | | | | | | | | | **期****末考试** | | |
| **考试时间** | | **120分钟** | | **考核方式** | | **闭卷笔试** | | | **学生类别** | | **本科** | **人数** | **400** |
| **适用专业或科类** | | | | **计算机科学与技术、软件工程、自动化专业** | | | | | | | **年级** | **2018级** | |
| **题号** | **一** | | **二** | **三** | **四** | | **五** | **六** | | **七** | **八** | **九** | **合计** |
| **得分** |  | |  |  |  | |  |  | |  |  |  |  |
| **签名** |  | |  |  |  | |  |  | |  |  |  |  |

**阅卷须知：阅卷用红色墨水笔书写，得分用阿拉伯数字写在每小题题号前，用正分表示，不得分则在题号前写0；大题得分登录在对应的分数框内；统一命题的课程应集体阅卷，流水作业；阅卷后要进行复核，发现漏评、漏记或总分统计错误应及时更正；对评定分数或统分记录进行修改时，修改人必须签名。**

**特别提醒：学生必须遵守课程考核纪律，违规者将受到严肃处**

**PLEASE ANSWER IN CHINESE OR IN ENGLISH OR BILINGUALISM!!**

**1 Fill the blanks（3 marks each, 15 marks in total）**

(1) The function  the general solution for first-order linear differential equation  (*x* > 0).

(2) The series  converges to if |*x*| <1.

(3) The limit of is \_\_\_\_\_\_\_\_\_\_\_ as (*x*, *y*) approaches (0, 0).

(4) The tangent plane of the surface at the point (1, 2, 4) is \_\_\_\_\_ \_\_\_\_\_\_.

(5) Reversing the order of integration:

\_\_\_\_\_\_\_ \_\_ \_\_ \_\_.

**2. Choose the corresponding letter of the best answer that completes the statement or answers the question among A, B, C, and D, and fill in the blanks (3 points each，15 points in all).**

(1) The vector \_\_\_\_\_\_\_\_\_\_ \_\_ is parallel to the line of intersection of the planes  and .

A．(14, 2, 15) B．(-14, 2, 15)

C．(14, -2, 15) D．(14, 2, -15)

(2) Let  . Then the partial derivative  ( ).

A．does not exist B．equals 1

C．is equal to 0 D. is -1．

(3) The interval of convergence of the power series  is\_\_\_\_\_ \_\_\_\_\_\_.

A． B．

C． D．

(4) The derivative of at the point (2, 0) in the direction of ***u*** = (3, -4) is \_\_\_\_\_.

A. 1 B. 2

C. -2 D. -1

(5) The line integral \_\_\_\_\_ ,where *C* is the line segment joining the origin and (1, 1, 1).

Figure 2

A. 1 B. -1

C. 2 D. 0

**3. Find the solutions for following problems by computing (8 points each，40 points in all)**

(1) Use the implicit differentiation to find the value of and for the equation  at the point (1, ln2, ln3).

**Solution**

(2) Calculate the line integral ，where *C* is the part of  from *A*(-1, 1) to *B*(1, 1).

**Solution**

(3) Evaluating the double integrals，where *R* is the triangle region with vertices *O*(0, 0), *A*(1, 1), and *B*(0, 1).

**Solution**

(4) Integrate the surface integral downward the surface *S* : .

**Solution**

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(5) Represent the function as power series at *x* = 1.

**Solution**

**4. Solve the following comprehensive problems (10 points each，30 points in all)**

(1) Show that  is continuous at every point except the origin (0, 0).

**Proof**

(2) Find the interval of convergence and the sum of the series.

**Solution**

(3) Find the minimum of  subject to the constraint 

**Solution**