**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 【B】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!!**

**1. Fill the best answer in the blanks (3 points each，15 points in all)**

(1) The general solution to the differential equation is \_\_\_\_\_\_\_\_\_\_ .

(2) The sum of the series is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(3) The angle between the planes  and  is

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

(4) If *z* =, then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

(5) Reversing the order of integration:

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

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

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

A． B．

C． D．

(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 equation for the tangent to the ellipse  at the point (-2, 1) is\_\_\_\_ \_\_\_\_\_ .

A.  B. 

C.  D. 

(5) The surface integral with respect to area \_\_\_\_ \_\_\_\_\_, where is the cone .

A.  B.  C.  D. 

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

(1) Find .

**Solution**

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

**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) Use Stokes’ Theorem to evaluate the line integral ，where *C* is curve determined by counterclockwise as viewed from the positive *z*-axis direction.

**Solution**

(5) Applying Green’s Theorem to calculate the line integral ，where *C* is the part of  from *A*(-1, 1) to *B*(1, 1).

**Solution**

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

(1) Find the shortest distance between and .

**Solution**

**(2)** Find the sum of the series .

**Solution**

(3) Let *f*(*x*) has the continuous first-order derivative. Show that the line integral ** is path independent in the upper half *xy*-plane ( *y* > 0), and compute the line integral from to (1, 2).

**Proof**