튜나 기출풀이 정규과정 (9월 ~ 12월)

화요일 - 파트별(어휘/문법/독해/논리)로 문제풀이 후, **파트별 해설**

금요일 - **실제시험지 크기 + OMR + 실제시험시간** -> 문풀 후, 해설

튜나 기출풀이 정규과정의 목표

1) 해당학교의 문항별 특색을 익히고, 문제접근방법을 익혀 오답률을 줄여나가는 과정

2) 문항별 시간배분방법, 실전감각까지 모두 가져가기

	해설강의 (60분 + @)	문제풀이 및 해설 (150분 + @)	과제
9월 15일		성균관대 2011	성균관대 2012 오전
9월 19일	성균관대 2012오전	성균관대 2012오후	성균관대 2013 오전
9월 22일	성균관대 2013 오전	성균관대 2013 오후	성균관대 2014
9월 26일	성균관대 2014	성균관대 2015	성균관대 2016
9월 30일	성균관대 2016	성균관대 2017	성균관대 2018
10월 3일	성균관대 2018	성균관대 2019	성균관대 2020
10월 6일	성균관대 2020	성균관대 2021	성균관대 2022
10월 10일	성균관대 2022	성균관대 2023	한국외대 19A
10월 13일	한국외대 19A	한국외대 19C	한국외대 20A
10월 17일	한국외대 20A	한국외대 20C	한국외대 21 T1
10월 20일	한국외대 2 T1	한국외대 21 T2	한국외대 21 T3
10월 24일	한국외대 21 T3	한국외대 22 T1	한국외대 22 T2
10월 27일	한국외대 22 T2	한국외대 23 T1	한국외대 23 T3
10월 31일	논리,빈칸 난이도 극악인 한양대, 서강대 대비하기위한 빈칸추론 + 더블블랭크/트리플블랭크 대비 강의		
11월 3일	논리,빈칸 난이도 극악인 한양대, 서강대 대비하기위한 빈칸추론 + 더블블랭크/트리플블랭크 대비 강의		
11월 7일	논리,빈칸 난이도 극악인 한양대, 서강대 대비하기위한 빈칸추론 + 더블블랭크/트리플블랭크 대비 강의		
11월 10일	논리,빈칸 난이도 극악인 한양대, 서강대 대비하기위한 빈칸추론 + 더블블랭크/트리플블랭크 대비 강의		
11월 14일		중앙대 17A,C	중앙대 18A,C
11월 17일	중앙대 18A,C	중앙대 19A,C	중앙대 20,21
11월 21일	중앙대 22,23	이화여대 텐블랭크 12년~16년	이화여대 17,18
11월 24일	이화여대 17,18	이화여대19	이화여대 20,21
11월 28일	이화여대 20,21	이화여대22	이화여대 23
12월 1일	이화여대 23	한양대 2014, 2015	한양대 16,17
12월 5일	한양대 16,17	한양대17,18	한양대 19,20
12월 8일	한양대19,20	한양대21,22	한양대 23
12월 12일	한양대 23	서강대13,14	서강대 15,16
12월 15일	서강대 15,16	서강대17,18	서강대 19,20
12월 19일	서강대 19,20	서강대21,22	서강대 23
12월 22일	서강대 23	기출 리와인드 및 앞으로의 방향성 질의응답 마무리	

기출과정문의는 https://tunatransfer.co.kr

2023학년도 숭실대학교 편입학 시험 문제 (자연계)

영 어, 수 학

지망학과(부) : 수험번호 : 성명 :

문항배점 : [1-10] 1점 / [11-20] 2.5점 / [21-25] 3점 / [26-31] 1.7점 / [32-44] 2점 / [45-50] 2.3점

[1-2] Choose the one that is grammatically NOT correct. (각 1점)

[1] Airport maintenance workers started ① sharing complaints about low pay, lousy conditions and ② broken promises of raises, even though their jobs required specialized training and ③ being critical to flight safety. A walkout could get them ④ fired, and plans for one three years earlier had fizzled.

[2] During the first stressful months of quarantine, job turnover plunged; people were just hoping ① to hang onto what they had. For millions of essential workers, there was never a choice but ② to keep showing up at stores, on deliveries and in factories, with food and agricultural workers ③ faced a higher chance of death on the job. But now millions of white collar professionals and office workers appear ④ poised to jump.

[3-6] Choose the most appropriate word for the blank. (각 1점)

[3] Her observations of the chimpanzees using tools _____ a then widely held belief that humans were the only animals that used tools, or had emotions or personalities.
① confirmed ② dispelled ③ underlined ④ incited

[4] Many are concerned that young artists of color will be left out again in the non-fungible token (NFT) art craze, as they have long been _____ in the "traditional" art world.
① celebrated ② instrumental
③ sensational ④ marginalized

[5] The Northern Sea Route traversing the Arctic offers the shortest passage between Europe and Asia, _____ nearly two weeks off a journey around India, while saving fuel, limiting vessel wear and tear, and reducing emissions.
① estimating ② lengthening
③ enduring ④ shaving

[6] The line between work and home has been blurring for decades, and with the pandemic, _____ completely for many of us, as we have been literally living at work.
① consolidated ② obliterated
③ tabulated ④ enumerated

[7-10] Choose the word(s) closest in meaning to the underlined part. (각 1점)

[7] Harvard became one of the most prominent universities to reckon with its own **complicity** in slavery, acknowledging that university presidents, faculty, and staff enslaved more than 70 people in the years from 1636 to 1783.
① collusion ② repentance
③ controversy ④ resilience

[8] Many people loathe the man, who has cultivated a public persona of roguish **obnoxiousness**.
① fortitude ② selfishness
③ ingenuity ④ offensiveness

[9] The International Space Station was sold on the promise that there were billions of dollars to be made in the results from research conducted aboard. NASA has tested that hypothesis and after 20 years, there's not been any **validation**.
① conference ② confirmation
③ coherence ④ computation

[10] The city's efforts to **capitalize on** its port, even as its shores erode and its sewage system shatters under the pressures of thawing permafrost, are echoed across the polar region.
① profit from ② invest in ③ dispose of ④ stand for

[11-13] Read the following passage and answer the questions. (각 2.5점)

A history of the film image ought properly to begin when people first started to draw and to make images. Since ancient times, philosophers have remarked on the human need to represent and reproduce the world in images. From primitive cave drawings and early religious icons to modern film and computer images, the image has represented human vision engaging the world. Across this history, we can identify three cultural roles for the image: as a manifestation of (A), as a tool explaining the world, and as a form of amusement.

Early images were often associated with magical or spiritual powers. By the sixteenth century, the power of images of Christ or the saints became a subject of dispute that led to the Reformation. Protestants accused the Roman Catholic Church of placing too much faith and power in images. In 1671, Athanasius Kircher's treatise *Ars magna lucis et umbrae* described early experiments with projected images, including the magic lantern, whose magical power to recreate images is identified by many as a precursor of the film projector. In 1839, Louis Jacques Mandé Daguerre produced the first (1) still photograph, although it is known that Joseph Niépce had created the prototype earlier in 1826 through a "camera obscura" device that creates images by drawing light through an aperture with a lens.

During the nineteenth century, scientists photographed a range of different sociological or physical phenomena that this (2) technological image could uniquely pinpoint and capture for investigation. Anticipating motion picture, in 1872, Eadweard Muybridge began to make a series of (3) photos of animals and humans in motion. It was one of the great examples of how photography permeated the culture of the second half of the nineteenth century from family photograph albums to private pornography collections. Combining amusement and science, a variety of contraptions explored the rudiments of the (4) moving image. The Phenakistiscope (1832) and the Zoetrope (1834), examples of such scientific toys presaging the cinema, allow a person to view a series of images through slits in a circular wheel, a view that creates the illusion of a moving image.

[11] Which of the following best fits in (A)?
① power and control ② cultural diversity
③ moral justice ④ religion and war

[12] Which of the following does NOT refer to the same thing?
① (1) ② (2) ③ (3) ④ (4)

[13] Which of the following is true?
① Kircher's treatise was the first experiment of moving image.
② The Roman Catholic blamed protestants for abusing the image of the saints.
③ Niépce is known to be the first person of creating the prototype of photograph.
④ The purpose of the Phenakistiscope was to produce still photographs.

<뒷면에 계속>

[14-16] Read the following passage and answer the questions. (각 2.5점)
Whether it's ladled from a Bethlehem street vendor's steaming urn or savored around a California kitchen table, the holiday drink sahlab tells a story in each sip. The first taste is as warming and floral as its sunlit origins. The second reveals a viscous texture as silky as orchid petals. And with the third comes the first hints of its history, the rich flavors of the Levant and the spices of holiday traditions that reach across religions and stretch back centuries.

In the kitchen of cookbook author Blanche Shaheen, steam drifts from small cups, carrying scents that recall the passing of seasons, late winter orange blossoms and the roses of spring. For Shaheen, sahlab isn't simply the winter holiday drink her mother taught her to make. It's also a story of family and the persistence of culture. Sahlab, a thick and rich mix of milk, sugar and spices, is a winter drink akin to a latte, and for Palestinian Christians, it has strong ties to the Christmas season. Though Shaheen grew up in California, her family's stories of the holiday treat are rooted in the streets of Bethlehem, the birthplace of the Jesus and thus the holiday.

Shaheen continues that tradition, with a few adjustments. She, like many Palestinians in the diaspora, mimics the texture and flavor of sahlab powder with the easier-to-find combination of corn starch and either rose water or orange blossom water. Sahlab has a starring role in the holidays and holds a special meaning for Shaheen. "Yes, it's a drink, but it's also (A) for us." As Palestinians in the US, she said, "we're looking for threads of connection that come from food and the rituals around them."

To Shaheen, sahlab embodies Christmas in Bethlehem, where much of her mother's family still resides. In Bethlehem, sahlab represents a spirit of celebration that (B). "The streets are lively, with bands playing, Christmas trees and decorations, and Muslims celebrating along with Christians," said Shaheen. "It's really beautiful to see everyone get together to celebrate and respect each other's traditions. And sahlab is part of that tradition."

[14] Which of the following best fits in (A)?
① an ethics ② an identity
③ a morality ④ a nutrient

[15] Which of the following best fits in (B)?
① transcends religion
② reunites family members
③ anticipates springtime
④ promotes American culture

[16] Which of the following is NOT true about sahlab?
① It has thick and sticky texture.
② It tastes milky, sugary, and spicy.
③ It is a native Californian drink.
④ It exudes scents of flowers.

[17-18] Read the following passage and answer the questions. (각 2.5점)
The study, which is believed to be the first nationwide examination of whether long-term post-Covid or related terms appear in official American death records, was recently published. While it found that such phrases were recorded in only a tiny proportion of the more than a million deaths tied to infection with the coronavirus, the researchers and other experts said the results added to growing recognition of how serious long-term post-Covid medical problems can be. Long Covid has caused or contributed to at least 3,500 deaths in the United States, an analysis of death certificates by the Centers for Disease Control and Prevention found.

"It's not one of the leading causes of death. But, considering that this is the first time that we've looked at it, and that long Covid is an illness that we're learning more about day after day, the major takeaway is that it is possible for somebody to die and for long Covid to have played a part in their death." Farida Ahmad, a health scientist who led the study said.

Long Covid is a complex (A) of symptoms that can last for months or longer and can affect virtually every organ system. Some of the most debilitating post-Covid symptoms are breathing problems, heart issues, extreme fatigue, and cognitive and neurological issues.

The researchers looked at death certificates in every state and Washington, D.C., dated from Jan. 1, 2020 to June 30, 2022. They found 1,021,487 certificates that included a diagnostic code for Covid-19 as an underlying or contributing cause of death. Of those, 3,544, or 0.3 percent of the total, listed long Covid or terms like post-Covid syndrome, chronic Covid or long-haul Covid.

Ms. Ahmad and other experts said the number of deaths related to long Covid in the study was almost certainly an underestimate. It has taken time for the condition to be recognized and identified by doctors and other medical providers. And the study was not able to include a new diagnostic code for long Covid because it was not yet being used in reporting of deaths in the United States, the researchers said.

[17] Which of the following best fits in (A)?
① constellation ② alleviation
③ divergence ④ emergency

[18] Which of the following is true about long Covid?
① It was listed as one of the leading causes of death in the U.S. in 2022.
② It is a term for any symptoms eventually leading to Covid.
③ It caused at least a million deaths during the two and half year period in the U.S.
④ It has not been conferred a specific diagnostic code in death records.

[19-20] Read the following passage and answer the questions. (각 2.5점)
Thanks to improved sensor technology and more remarkable advances in Machine Learning and Artificial Intelligence, robots will keep moving from mere rote machines to collaborators with cognitive functions. These advances, and other associated fields, are enjoying an upwards trajectory, and robotics will significantly benefit from these strides.

We can expect to see more significant numbers of increasingly sophisticated robots incorporated into more areas of life, working with humans. (A) dystopian-minded prophets of doom, these improved robots will not replace workers. Industries rise and fall, and some become obsolete in the face of new technologies, bringing new opportunities for employment and education. That's the case with robots. Perhaps there will be fewer human workers welding automobile frames, but there will be a greater need for skilled technicians to program, maintain, and repair the machines. In many cases, this means that employees could receive valuable in-house training and upskilling, giving them a set of skills that could apply to robot programming and maintenance and other fields and industries.

Robots will increase economic growth and productivity and create new career opportunities for many people worldwide. However, there are still warnings out there about massive job losses, forecasting losses of 20 million manufacturing jobs by 2030, or how 30% of all jobs could be automated by 2030. But, thanks to the consistent levels of precision that robots offer, we can look forward to robots handling more of the burdensome, redundant manual labor tasks, making transportation work more efficiently, improving healthcare, and freeing people to improve themselves. But, of course, time will tell how this all works out.

<다음면에 계속>

[19] Which of the following best fits in (A)?
① In terms of ② Contrary to
③ Relying on ④ In line with

[20] Which of the following is NOT true?
① Robots in the future will benefit from the advances in machine learning and artificial intelligence.
② The demand for skilled technicians will increase in overall management of robots.
③ More than half of all the jobs are to be automated by 2030.
④ Robots will do most of the repetitive tasks everywhere in the future.

[21-22] Read the following passage and answer the questions. (각 3점)

Recently an international team of scientists studied records of 559,903 men and 760,205 women who were operated on by 2,937 surgeons in Ontario, Canada, over a 12-year period. Among the men, roughly 91 percent had male surgeons and 9 percent had female surgeons. Of the women, 88 percent had male surgeons and 12 percent had female surgeons.

The female surgeons were, on average, younger, performed fewer surgeries and operated on patients who were generally healthier than those treated by the men. The researchers controlled for these factors, and for patient characteristics such as age, income and whether they lived in a rural or urban area. They also considered whether the surgery was done at a community hospital or a major academic medical center.

Overall, about 15 percent of patients had postoperative problems: 8.7 percent had significant complications within 30 days of the operation; 6.7 percent were readmitted to the hospital; and 1.7 percent died. The researchers found that when the sex of the surgeon and patient were different, the surgery was slightly less successful: There was a roughly 8 percent increase in complications or death, although no difference in readmissions to the hospital. This trend was consistent across different types of surgery and patient characteristics.

But the researchers also found that on the whole, women surgeons tended to be more successful than male surgeons. And the worst surgical outcomes occurred when female patients were treated by male surgeons. Compared with a female patient treated by a female surgeon, a woman treated by a male surgeon was about 15 percent more likely to have complications, be readmitted to the hospital or die within 30 days of the operation.

[21] Which of the following is true about the study?
① It was based on the even numbers of male and female surgeons.
② Female patients had better results in surgeries when treated by male surgeons.
③ Female surgeons performed fewer but better surgeries in general.
④ Sex of surgeons and their patients are not related to the outcomes of surgeries.

[22] Which of the following is true about the data in the study?
① It was collected in Canada over two decades.
② 88% of female patients had female surgeons.
③ It contained more male surgeons' cases than female surgeons' cases.
④ 15% of male patients who underwent surgeries were rehospitalized.

[23-25] Read the following passage and answer the questions. (각 3점)

Charles Darwin's familiarity with human-caused extinction is clear from *On the Origin of Species*. He observes that animals inevitably become rare before they become extinct, adding that "we know this has been the progress of events with those animals which have been exterminated, either locally or wholly, through man's (A)." This statement is a brief allusion and, in its brevity, suggestive. Darwin assumes that his readers are familiar with such "events" and already habituated to them. He himself seems to find nothing remarkable or troubling about this. But human-caused extinction is of course troubling for many reasons, some of which have to do with Darwin's own theory, and it's puzzling that a writer as shrewd and self-critical as Darwin should not have noticed this.

In the *Origin*, Darwin drew no distinction between man and other organisms. As he and many of his contemporaries recognized, this equivalence was the most radical aspect of his work. Humans, just like any other species, descended from more ancient forbearers with modification. Even those qualities that seemed to set people apart—language, wisdom, a sense of right and wrong—had evolved in the same manner as other adaptive traits, such as longer beaks or sharper incisors. "(B)" is at the heart of Darwin's theory as one of his biographers has put it.

And what was true of evolution should also hold for extinction, since, according to Darwin, the latter was merely a side effect of the former. Species were annihilated, just as they were created, by "slow acting and still existing causes," which is to say, through competition and natural selection. To invoke any other mechanism was nothing more than mystification.

[23] Which of the following best fits in (A)?
① charity ② sanity
③ mercy ④ agency

[24] Which of the following best fits in (B)?
① The denial of humanity's special status
② Human's predominance over animals
③ Human competition for survival
④ The rejection of the evolutionary process

[25] Which of the following is best for the title?
① The Origin of the Universe
② Darwin's Contradiction to His Theory
③ What Influenced Darwin's Theory?
④ Evolution or Revolution?

<수학문제는 뒷면에 계속됩니다>

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[26] 극한값 $\lim_{x\to 1^-}\frac{2x-2}{|x^3-x^2|}$ 을 구하면? (1.7점)

① -2 ② 0 ③ 2 ④ ∞

[27] 어떤 함수 f의 도함수가 $f'(x)=\sin(3x+2)$일 때,
$0<x<5$에서 함수 f의 극대점의 개수는? (1.7점)

① 2 ② 3 ③ 4 ④ 5

[28] $f(x)=2x^2+3x+1\ (x\geq 0)$일 때 $(f^{-1})'(6)$을 구하면? (1.7점)

① $\frac{1}{7}$ ② 1 ③ 5 ④ 7

[29] 정적분 $\int_0^4 e^{\sqrt{x}}dx$ 의 값은? (1.7점)

① e^2-1 ② e^2+1 ③ e^2 ④ $2e^2+2$

[30] $n\times n$ 행렬 A,B에 대한 설명 중, 참인 명제의 개수를 구하면? (1.7점)

(가) AB가 가역행렬이면 $A+B$도 가역행렬이다.
(나) A,B가 모두 대칭행렬이면 A^2+B^2도 대칭행렬이다.
(다) A,B가 모두 직교행렬이면 AB도 직교행렬이다.
(라) A가 직교행렬이면 $\det(A)=\pm 1$이다.

① 1 ② 2 ③ 3 ④ 4

[31] 다음 중 선형미분방정식을 모두 고른 것은? (1.7점)

(가) $(x+y)dy+2xdx=0$
(나) $e^x\frac{dy}{dx}+y\sin x=0$
(다) $\frac{d^2y}{dx^2}+xy=0$

① (다) ② (가), (나)
③ (나), (다) ④ (가), (나), (다)

[32] $2\sin y=3\cos x-3$일 때, $(0,0)$에서 $\frac{d^2y}{dx^2}$를 구하면? (2.0점)

① $-\frac{21}{8}$ ② $-\frac{3}{2}$ ③ $\frac{3}{2}$ ④ $\frac{21}{8}$

[33] 다음 중 수렴하는 급수는? (2.0점)

(가) $1+\frac{2}{3}+\frac{3}{5}+\frac{4}{7}+\cdots$
(나) $1+\frac{1}{5}+\frac{1}{9}+\frac{1}{13}+\cdots$
(다) $\frac{1}{e}-\frac{2}{e^2}+\frac{3}{e^3}-\frac{4}{e^4}+\cdots$
(라) $3+(-3)+3+\cdots+(-1)^{(n-1)}\cdot 3+\cdots$

① (가), (나) ② (나), (다)
③ (다) ④ (라)

[34] $f(x)=x\cdot e^x$의 맥클로린 급수에서 0이 아닌 처음 세 항의 합으로 표현되는 함수의 변곡점의 x좌표를 구하면? (2.0점)

① $-\frac{2}{3}$ ② $-\frac{1}{3}$ ③ $-\frac{3}{2}$ ④ $\frac{1}{2}$

[35] $-4\leq x\leq 4$에서 정의된 함수 f는 구간별로 기울기가 -1 또는 1인 일차함수들이 이어져 있으며 연속이라고 하자.
$f(0)=0,\ f(-4)=f(-2)=f(2)=f(4)=2$일 때 전체 구간에 대한 f의 평균값으로 가능하지 않은 것은? (단, 각 부분 구간의 길이는 1) (2.0점)

① $\frac{5}{4}$ ② $\frac{3}{2}$ ③ $\frac{7}{4}$ ④ 2

[36] 정적분 $\int_{-2}^{2}\lim_{n\to\infty}\frac{(1+x^2)(2x+x^n)}{1+x^n}dx$ 의 값은? (2.0점)

① $\frac{3}{2}$ ② 3 ③ $\frac{10}{3}$ ④ $\frac{20}{3}$

[37] $f(x)=2x+\cos x$ 일 때 정적분 $\int_1^{2\pi-1}f^{-1}(x)dx$ 의 값은? (2.0점)

① $\pi^2-\pi$ ② π^2-1 ③ $2\pi+1$ ④ $\frac{\pi^2}{2}+1$

[38] 다음 이상적분 중 발산하는 것을 모두 고른 것은? (2.0점)

(가) $\int_0^1\frac{\cos x}{2x}dx$ (나) $\int_{-\infty}^{-1}\frac{1}{\sqrt{3-x}}dx$
(다) $\int_0^1\frac{e^x}{\sqrt{2x}}dx$ (라) $\int_0^1\frac{\ln x}{1+x^3}dx$

① (가), (나) ② (나), (다) ③ (다), (라) ④ (가), (라)

<다음면에 계속>

[39] 이중적분 $\int_0^2 \int_0^{\frac{x^2}{2}} x\,(x^2+y^2+1)dy\,dx$의 값은? (2.0점)

① -6 ② $-\frac{26}{3}$ ③ $\frac{26}{3}$ ④ 6

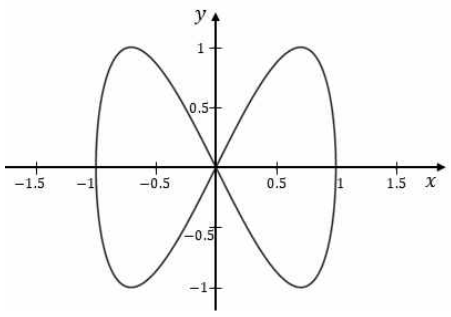
[40] 매개변수곡선 $x=t^2,\ y=t^3-3t+1$ 위의 점 A에서 두 개의 접선을 갖는다고 하자. 이때 점 A에서 두 접선의 기울기의 곱은? (2.0점)

① -4 ② -3 ③ -2 ④ -1

[41] 매개변수곡선 $x=t-\sin t,\ y=1-\cos t\ \ (0\le t\le 2\pi)$에서 $y\ge 1$인 부분의 길이는? (2.0점)

① 2 ② 4 ③ $4\sqrt{2}$ ④ $8\sqrt{2}$

[42] 아래와 같이 표현되는 매개변수방정식은? (2.0점)



① $x=\sin\theta,\ y=\sin 4\theta \quad (0\le\theta\le 2\pi)$

② $x=\cos 2\theta,\ y=\cos\theta \quad (0\le\theta\le 2\pi)$

③ $x=\cos\theta,\ y=\cos 4\theta-1 \quad (0\le\theta\le 2\pi)$

④ $x=\sin\theta,\ y=\sin 2\theta \quad (0\le\theta\le 2\pi)$

[43] 행렬 $A=\begin{bmatrix}1&0&1\\2&2&0\\35&0&3\end{bmatrix}, B=\begin{bmatrix}7&-14&8\\1&0&0\\0&1&0\end{bmatrix}$에 대하여 A^{-1}의 고윳값을 $\lambda_1,\ \lambda_2,\ \lambda_3$라고 하고, B^2의 고윳값을 $\lambda_4,\ \lambda_5,\ \lambda_6$라고 할 때, 모든 고윳값들의 곱 $\lambda_1\lambda_2\lambda_3\lambda_4\lambda_5\lambda_6$의 값은? (2.0점)

① -512 ② -1 ③ 1 ④ 512

[44] $(2xf(x))'=\frac{\partial}{\partial y}(x^2+y)f(x),\ f(1)=2$을 만족시키는 함수 f에 대하여 $f(4)$의 값은? (2.0점)

① $\frac{1}{2}$ ② 1 ③ $\frac{3}{2}$ ④ 2

[45] 다음 조건을 만족시키는 다항함수 $f(x)$에 대해 $f(2)$의 값은? (2.3점)

(가) $f(x)$는 5차 다항식이고 최고차항의 계수는 1이다.

(나) $y=f(x)$는 x축과 서로 다른 두 점에서 만나고 교점의 x좌표는 각각 -1과 1이다.

(다) $f(0)=2$이고 $f'(0)=-4$이다.

① 2 ② 4 ③ 6 ④ 8

[46] $\int_{-\infty}^{\infty} e^{-\frac{1}{2}x^2}dx=\sqrt{2\pi}$임을 이용하여,

$\left(\int_0^{\infty} x^2 e^{-\frac{1}{2}x^2}dx\right)\times\left(\int_0^{\infty}\sqrt{\frac{2}{x}}\,e^{-\frac{1}{2}x}dx\right)$ 의 값을 구하면? (2.3점)

① $\frac{\pi}{2}$ ② π ③ $\frac{\sqrt{2}}{2}\pi$ ④ $\sqrt{2}\pi$

[47] 영역 A와 영역 B가 다음과 같다고 하자.

$A=\{(x,y)\,|\,x=r\cos\theta,\ y=r\sin\theta,\ r\le 3\sin\theta,\ 0\le\theta\le\pi\}$

$B=\{(x,y)\,|\,x=r\cos\theta,\ y=r\sin\theta,\ r\le\sqrt{3}+\sin\theta,\ 0\le\theta\le 2\pi\}$

이때 $A-B$가 나타내는 영역의 넓이는? (2.3점)

① $\frac{\pi}{6}$ ② $\sqrt{3}-\frac{\pi}{3}$ ③ $\frac{2}{3}\pi-\sqrt{3}$ ④ $\frac{\pi}{3}$

[48] $R=\{(x,y,z)\,|\,0\le x\le\sqrt{y},\ 0\le y\le 2,\ 0\le z\le 3x\}$일 때, 삼중적분 $\iiint_R (x^2+y^2+z^2)dx\,dy\,dz$의 값은? (2.3점)

① 8 ② 14 ③ 4π ④ 8π

[49] 반구면 $x^2+y^2+z^2=1\ \ (z\ge 0)$을 원기둥면 $x^2+(y-\frac{1}{2})^2=\frac{1}{4}$로 잘라낸 곡면의 넓이는? (2.3점)

① $\pi-2$ ② $2\pi-5$ ③ $\sqrt{2}\pi-3$ ④ $2\sqrt{2}\pi-7$

[50] 다음 미분방정식의 해가 $y=f(x)$일 때, $f(\frac{\pi}{6})$의 실수부는?

$y''+2iy'-y=0\ \ (i=\sqrt{-1},\ f(0)=2,\ f'(0)=0)$ (2.3점)

① $-\sqrt{3}-\frac{\pi}{6}$ ② $-\sqrt{3}+\frac{\pi}{6}$

③ $\sqrt{3}-\frac{\pi}{6}$ ④ $\sqrt{3}+\frac{\pi}{6}$

<끝>