

[해설] $f\left(-\frac{1}{2}\right) = \lim_{n \rightarrow \infty} \frac{\left(-\frac{1}{2}\right)^{n+2} - 6\left(-\frac{1}{2}\right) + 2}{\left(-\frac{1}{2}\right)^n + 1} = 5$

$f(4) = \lim_{n \rightarrow \infty} \frac{4^{n+2} - 6 \cdot 4 + 2}{4^n + 1} = 16$

$\therefore f\left(-\frac{1}{2}\right) + f(4) = 5 + 16 = 21$

22. [출제의도] 극한의 성질을 이용하여 극한값 구하기

[해설] (분자) $= (3n+1)^3 = 27n^3 + 27n^2 + 9n + 1$

(분모) $= \sum_{k=1}^n k(k+1) = \sum_{k=1}^n k^2 + \sum_{k=1}^n k$
 $= \frac{n(n+1)(2n+1)}{6} + \frac{n(n+1)}{2}$ 이므로

(준식) $= \lim_{n \rightarrow \infty} \frac{27n^3 + 27n^2 + 9n + 1}{\frac{n(n+1)(2n+1)}{6} + \frac{n(n+1)}{2}} = 81$

23. [출제의도] 역행렬을 이용하여 행렬의 성분구하기

[해설] $A\begin{pmatrix} 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$, $A\begin{pmatrix} 3 \\ 4 \end{pmatrix} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ 이므로 $A\begin{pmatrix} 1 & 3 \\ 2 & 4 \end{pmatrix} = \begin{pmatrix} 2 & 4 \\ 3 & 5 \end{pmatrix}$.

$A = -\frac{1}{2} \begin{pmatrix} 2 & 4 \\ 3 & 5 \end{pmatrix} \begin{pmatrix} 4 & -3 \\ -2 & 1 \end{pmatrix} = \begin{pmatrix} 0 & 1 \\ -1 & 2 \end{pmatrix}$,

$A^2 = \begin{pmatrix} -1 & 2 \\ -2 & 3 \end{pmatrix}$

준식 $(A + A^2)\begin{pmatrix} 1 \\ 2 \end{pmatrix} = \begin{pmatrix} 5 \\ 7 \end{pmatrix} \therefore a + b = 12$

24. [출제의도] 로그방정식의 해 구하기

[해설] 양변에 밑을 3으로 하는 로그를 취하면

$\log_3 x^{\log_3 x} = \log_3 27x^3$ 이며 $\log_3 x^{\log_3 x} = (\log_3 x)^2$

이므로 $(\log_3 x)^2 - 3\log_3 x - 3 = 0$

$t = \log_3 x$ 라 하면 $t^2 - 3t - 3 = 0$ 은 서로 다른 두 실근을 가진다. 이를 $\log_3 \alpha$, $\log_3 \beta$ 라 하면 두 근의 합은

$3 = \log_3 \alpha + \log_3 \beta = \log_3 \alpha\beta$ 이므로 $\alpha\beta = 27$ 이다.

25. [출제의도] 수리 '가' 형 25변과 같음

26. [출제의도] 수열의 극한의 성질 이해하기

[해설] $\{a_n\}: -1, 1, -1, 1, \dots$

$\{b_n\}: 1, -1, 1, -1, \dots$ 이므로

ㄱ. $\lim_{n \rightarrow \infty} \frac{a_n}{b_n} = -1$

ㄴ. $\lim_{n \rightarrow \infty} (a_n + b_n) = 0$

ㄷ. $\{a_n\}$, $\{b_n\}$ 모두 발산하므로 성립하지 않는다.

27. [출제의도] 부분분수로 표현된 수열의 합 구하기

[해설] $a_n = 3n - 1$ 이므로

$\frac{1}{a_k a_{k+1}} = \frac{1}{3k-1} \times \frac{1}{3k+2}$ 이다.

$\sum_{k=1}^{10} \frac{1}{a_k a_{k+1}} = \sum_{k=1}^{10} \frac{1}{3} \left(\frac{1}{3k-1} - \frac{1}{3k+2} \right)$
 $= \frac{1}{3} \left(\frac{1}{2} - \frac{1}{32} \right) = \frac{5}{32}$

28. [출제의도] 지수함수의 평행과 대칭이동 이해하기

[해설] ㄱ. $y - 2 = 16^{-x - \frac{3}{2}} = \left(\frac{1}{16}\right)^{x + \frac{3}{2}}$ 밑이 $\frac{1}{16}$

이므로 평행, 대칭이동으로 일치하지 않는다.

ㄴ. 준식 $\rightarrow y = x$ 에 대칭 $\rightarrow y$ 축 방향으로 -1 만큼 평행이동하면 ㄴ이 된다.

ㄷ. 준식 $\rightarrow y = x$ 에 대칭 $\rightarrow x$ 축 방향으로 $\frac{3}{2}$, y 축방

향으로 $\frac{1}{2}$ 만큼 평행이동하면 ㄷ이 된다.

29. [출제의도] 행렬의 거듭제곱의 성질 이해하기

[해설] ㄱ. $(A^n)^2 = (A^2)^n = A^n$

$\therefore A^n \in X$

ㄴ. $\{(E-A)^n\}^2 = \{(E-A)^2\}^n$
 $= (E-2A+A^2)^n$
 $= (E-A)^n$

$\therefore (E-A)^n \in X$

ㄷ. (반례) $A = \begin{pmatrix} 3 & 6 \\ -1 & -2 \end{pmatrix}$, $B = \begin{pmatrix} 3 & 1 \\ -6 & -2 \end{pmatrix}$ 일 때,

$AB = \begin{pmatrix} -27 & -9 \\ 9 & 3 \end{pmatrix} \neq (AB)^2 \therefore AB \notin X$

30. [출제의도] 연립일차방정식과 행렬의 관계 이해하기

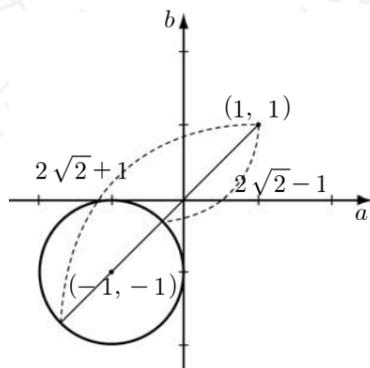
[해설] $\begin{pmatrix} a+2 & -b-1 \\ b+1 & a \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 0 \\ 0 \end{pmatrix}$ 에서

$\begin{pmatrix} a+2 & -(b+1) \\ b+1 & a \end{pmatrix}$ 의 역행렬이 존재하지 않아야 하므로

$a(a+2) + (b+1)^2 = 0$ 이며, (a, b) 는 원의 방정식 $(a+1)^2 + (b+1)^2 = 1$ 을 만족한다.

그림에서 $\sqrt{(a-1)^2 + (b-1)^2}$ 은 점 $(1, 1)$ 에서 원 위의 점 (a, b) 까지의 거리이므로 최댓값은 $2\sqrt{2} + 1$, 최솟값은 $2\sqrt{2} - 1$ 이다.

$\therefore (2\sqrt{2} + 1)(2\sqrt{2} - 1) = 7$



• 3교시 외국어영어영역 •

1	2	2	4	3	3	4	4	5	4
6	5	7	1	8	4	9	4	10	5
11	3	12	4	13	2	14	3	15	3
16	1	17	1	18	2	19	5	20	1
21	5	22	1	23	3	24	2	25	1
26	3	27	2	28	3	29	2	30	5
31	1	32	4	33	5	34	4	35	2
36	5	37	5	38	2	39	1	40	5
41	4	42	1	43	1	44	3	45	1
46	3	47	3	48	5	49	2	50	5

[듣 기]

1. [출제의도] 설명하는 대상 파악하기

W: Excuse me. Could you help me?
 I'd like to exchange this sweater.
 M: What's the problem with it?
 W: My friend bought it for me, but I don't like it.
 It's too old-fashioned. I want something more stylish.
 M: I see. Well, why don't you look around?
 How about comfortable round-neck sweaters with three buttons?
 W: I don't think round-neck sweaters are stylish.
 I want a more fashionable sweater.
 M: Then how about that V-neck sweater with a silk belt?
 W: Hmm... That looks better than the round-neck one. But the sleeves are a little short.
 I like long, wavy style sleeves.
 M: Yes, we have exactly what you want.
 It is a V-neck with a belt and long, wavy sleeves.
 W: It looks great! But I'd rather have the same style sweater with a brooch.
 M: No problem. I'll exchange it for you.

[어구] brooch 양복 깃이나 앞가슴에 다는 장신구

[해설] V-neck sweater, silk belt, long, wavy style sleeves, brooch를 통해 설명하고 있는 스웨터를 알 수 있다.

2. [출제의도] 여자의 심경 추론하기

W: Where does your sister work?
 M: In a restaurant.
 W: Oh, really? My brother works in a restaurant, too. He's an assistant cook.
 M: How does he like his job?
 W: He doesn't like it very much. He doesn't like the chef. I heard the chef is so demanding in everything.
 M: That's too bad. What restaurant does he work for?
 W: The Pilgrim restaurant on 5th avenue.
 M: What a coincidence! My sister works there, too.
 W: Oh, that's interesting. What does she do?
 M: Actually, she's the chef.

[어구] chef 요리사 demanding 너무 많은 요구를 하는

[해설] 여자의 남동생을 힘들게 만드는 요리사가 바로 남자의 여동생임을 알고 당황해 하고 있는 상황임을 알 수 있다.

3. [출제의도] 설명하는 대상 파악하기

M: This is one of the most famous Korean art forms in existence, and a method of singing developed in the mid-Joseon Dynasty. Its

expressive singing style, theatrical lyrics, and rich narrative are delivered by a single performer with song, expression and body language all playing a part. The vocalist is accompanied by a drum and some performances last over three or four hours. There were originally 12 *Madang*, but only five have been passed down by the former masters.

[어구] theatrical 연극조의 lyrics (유행가 따위의) 가사
 [해설] 북 장단에 맞추어 부르는 연극조의 노래이며, 이야기체의 12마당으로 구성되어 여러 시간 동안 공연된다는 것으로 보아 판소리를 설명하고 있음을 알 수 있다.

4. [출제의도] 남자가 할 일 고르기

W: Honey, we need to replace the ceiling light.
 M: Don't worry. I can do it with this instruction.
 It looks easy.
 W: Just get an electrician. Look at all the wires!
 M: Yeah, but there are instructions.
 You just read them. I'll do the wiring.
 W: I don't know about this. Okay. It says match the black wire in the light to the black wire from the ceiling. Then white to white.
 M: You are on the wrong page!
 There's nothing black or white here.
 W: I'm on the ONLY page. It seems to be more difficult than what we expected.
 M: All right. We'd better get some help from an expert.
 W: That's what I thought. Here is the phone book, honey.

[어구] instructions (제품의) 사용설명서 expert 전문가
 [해설] 남자는 사용설명서를 읽고 직접 천장에 있는 등을 고치려다가 생각보다 어렵다는 것을 알고 전기 기사를 부르게 된다.

5. [출제의도] 지불할 총액 고르기

M: Good morning! How may I help you?
 W: Good morning! I'm here to rent a car.
 M: I see. This catalog shows all the cars available.
 You can choose any one you like.
 W: I like this economy car.
 What's the rate for this car?
 M: We have a weekday rate of \$20 and weekend and holiday rates are \$30 per day.
 How long would you like to use it?
 W: From next Saturday to Sunday. Two days.
 M: Okay. Then we can offer you the weekend rate.
 And would you like limited or unlimited mileage?
 W: I'll take unlimited mileage.
 M: Unlimited mileage costs \$5 more a day.
 W: That's fine. No problem.

[어구] unlimited mileage 운행거리에 제한이 없는 요금제
 [해설] 하루에 \$30씩 토요일부터 일요일까지 이틀간 사용하게 되며, unlimited mileage가 하루당 \$5씩 가산되므로 \$70이 된다.

6. [출제의도] 여자가 하는 말의 목적 파악하기

W: May I have your attention, please? Due to the many reports of insects in the apartment complex, we will be spraying insecticide in all of our 6 apartment buildings beginning with blocks 1 and 2, starting tomorrow for three days. Residents in blocks 1 and 2 should have someone in the house allow the workers in during the afternoon from two to four. The spraying of blocks 3 and 4 will take place the day after tomorrow and blocks 5 and 6 on Thursday. If you have any pets, please be sure to find a suitable place for them to stay during the spray. Thank you for your cooperation.

[어구] insecticide 살충제
 [해설] 벌레가 너무 많아서 아파트 단지 내에 살충제를 뿌릴 계획이므로 그에 따른 유의 사항을 안내하고 있음을 알 수 있다.

7. [출제의도] 여자가 남자에게 부탁한 일 고르기

[Telephone rings.]
 W: Hello? Tom? It's me, mom.
 M: Hi, mom.
 W: How are you? How's the new job going?
 M: It's okay, but I am tired.
 I'm in the office until eight o'clock every night.
 W: Eight o'clock! That's terrible.
 Have you been eating well?
 M: Yes. After work, I go out for something to eat.
 W: That's good. By the way, I'm going to San Francisco next Tuesday for a teachers' conference. Can I stay at your apartment?
 M: Next Tuesday? Of course you can stay here.
 W: Wonderful! I can't wait to see you again, son.
 M: Same here, See you next week, and give my love to dad!
 W: Okay, honey. Take care.

[해설] 다음 주 화요일에 있을 회의에 참석하기 위해 아들에게 숙소 제공을 부탁하고 있다.

8. [출제의도] 대화자의 관계 파악하기

W: Excuse me. There's something wrong with the washer. It won't spin.
 M: Did you put coins in?
 W: Yes, but it won't work.
 M: Then perhaps it's because the clothes inside put it off balance.
 W: What should I do?
 M: Open the lid and redistribute the clothes evenly. Close the lid, then the machine will start automatically.
 W: All right. [slight pause] Oh, now it's working. Thanks. What time do you close? Can I go shopping while my clothes finish?
 M: We will be open until 10 p.m. Take your time and enjoy your shopping.
 W: Thanks.

[어구] washer 세탁기 redistribute 재분배하다 evenly 평평하게 laundromat 셀프서비스 세탁소
 [해설] 여자가 동전을 투입한 세탁기가 작동하지 않아서 작동법을 묻고 있으며 세탁이 다 될 때까지 쇼핑을 다녀오겠다는 대화로 미루어보아 빨래방에서 이루어지는 대화임을 알 수 있다.

9. [출제의도] 대화가 이루어진 장소 파악하기

W: Good morning. May I help you?
 M: Yes, I'm looking for a job.
 W: Well, you've come to the right place.
 We match every job seeker with an appropriate job. Please fill out this form.
 M: I've never seen this before.
 Can you show me how to fill it out?
 W: Sure. Just write your phone number and previous jobs here.
 M: I hope you can read my handwriting.
 W: It's fine. What kind of job are you looking for?
 M: I want a job that will allow me to work outside.
 I can't stand being in an office all day.
 W: Would you like to work in sales?
 M: That sounds good.

[어구] job seeker 구직자
 [해설] match every job seeker with an appropriate job, fill out the form 등을 통해 직업소개소임을 파악할 수 있다.

10. [출제의도] 남자가 여자를 위해 할 일 고르기

W: What do you want to do in the future?
 M: I don't know what kind of job I want, but I know I want to study languages.
 W: That sounds interesting.
 Which languages do you want to study?
 M: Korean and Spanish. What do you think you'll do?
 W: I want to be an architect. After I graduate, I hope to get a job back in my hometown and settle down. I'd like to design houses and buildings there.
 M: That sounds like a good plan.
 W: My parents want me to study business, but I'm not sure that's right for me.
 M: We still have three years until graduation. Take your time.
 W: For now I'd like to have a part time job as an assistant architect.
 Do you know any architects I can assist?
 M: Sure. My uncle is an architect.
 Maybe you can help him. I'll talk to him.
 W: Thanks. Lunch is on me.

[어구] architect 건축가 settle down 정착하다
 [해설] 건축가 지망생인 여자에게 남자가 건축 일을 할 수 있는 아르바이트 자리를 소개시켜 주려고 한다.

11. [출제의도] 세부사항 파악하기

M: Hi, Rachel. What can I do for you?
 W: I want to register for next semester, but I

don't know what course to choose.
 M: Your major is Chemical Engineering. How about Chemistry?
 W: I've already chosen subjects related to my major, but I'm concerned about electives.
 M: What about geology 101, then?
 W: Indeed, I'm interested in animals, especially in cloning. It's just fascinating to me how people can clone animals.
 M: Okay, then I have a perfect class for you, genetics 302. It's a pretty general class as far as genetics goes.
 W: That's perfect, but I have a part time job at that time.
 M: Then you can take biology 201. It's about the scientific study of living organisms.
 W: That sounds interesting, but I want to study genetics anyway. I think I'll quit my part time job.
 M: As you wish.

[어구] major 전공 electives 선택과목 genetics 유전학 biology 생물학

[해설] 여자는 아르바이트를 그만두고 유전학 과목을 선택하려 한다.

12. [출제의도] 세부사항 파악하기

M: Ladies and gentlemen! Welcome to the fifth annual photo contest. Past participants have ranged in age from 13 to 86. Grand prize winners have included a 60-year-old teacher from Malaysia and an 18-year-old high school senior from Minnesota. This year's contest will close on Thursday, January 3, at 2 p. m. Winners in five categories will each receive \$500, and the grand prize winner will get a four-day and three-night adventure. All entries must be submitted online. For details and contest rules, please go to photocontest.smithmag.com.

[어구] participant 참가자

[해설] 각 종목의 우승자는 \$500을 상금으로 받으며, 대상수상자에게는 3박 4일 체험여행의 기회가 주어진다.

13. [출제의도] 그림 상황에 알맞은 대화 고르기

①
 W: It is hot in here, isn't it?
 M: Right! The air-conditioner seems to be out of order.
 ②
 W: Come on! If we hurry, we can catch the bus.
 M: You don't need to hurry.
 There'll be another one in 10 minutes.

③
 W: Can you tell me when to get off?
 M: Sure. We have five more stops from here!

④

W: How much is this toy bus?
 M: It costs \$3.
 ⑤
 W: Have a seat here. I'll get off at this stop.
 M: Thank you.

[해설] 여자는 버스를 향해 뛰어가면서 남자에게 빨리 오라고 하는데, 남자는 다음 버스를 타려고 하는 상황임을 알 수 있다.

14. [출제의도] 대화에 적절한 응답 파악하기

M: I can't stand it, Judy. This work is so boring. What should I do?
 W: You should stop complaining. This job is better than any other job.
 M: You keep telling me that. But it's the same thing every day. I never get a chance to do anything interesting.
 W: Have you told your boss how you feel?
 M: No. I don't want to talk to him. Besides, he's too busy running for mayor.
 W: Listen. I get along pretty well with your boss. I'll talk to him for you.
 M: Don't waste your time. He doesn't care about people's feelings.
 W: I don't think you're being fair.
 M: Oh, you're always defending my boss. It was silly of me to ask you for advice.
 W: _____

[어구] complain 불평하다 mayor 시장

[해설] 여자가 남자의 상사를 옹호하는 발언을 하자 남자가 허탈해 하는 상황에 어울리는 여자의 대답을 찾는 문제이다.

15. [출제의도] 대화에 적절한 응답 파악하기

W: Have you heard about Jennifer?
 M: No, I haven't talked to her in a while. How are things with her?
 W: Not so good. She sprained her ankle.
 M: That's terrible. How did it happen?
 W: Well, she went inline skating last Sunday. She had a bad fall and sprained her ankle.
 M: That doesn't sound so good, but I'm glad it wasn't worse. How's she doing with her schoolwork?
 W: Haven't you heard? She's decided to stay out of college temporarily and become a singer.
 M: You're kidding! What made her decide to do that?
 W: Well, you know the CD she made in her home recording studio. She sent it to a record company and they're giving her a contract!
 M: _____

[어구] sprain (발목·손목 따위를) 빠다

[해설] 두 사람이 언급하고 있는 사람이 음반회사와 계약을 했다는 좋은 소식을 듣고 이에 어울리는 대답을 고르는 문제이다.

16. [출제의도] 대화에 적절한 응답 파악하기

W: This farm is too much trouble, honey. I wish we could sell it and move to the city.
 M: What would we do in the city?
 Farming is the only life we know.
 W: You could work for your brother. He'd give you a job.
 M: No thanks. I couldn't stand working in a supermarket.
 W: Oh, it wouldn't be so bad.
 M: You'd get homesick for this old place.
 W: I could start a bakery with the money we'd get from this farm. I wouldn't have time to get homesick.
 M: Even though you would be busy, you'd miss all your friends. I know you.
 W: We could make new friends in the city. There would be more places to go and things to do. We'd have a great time.
 M: _____

[어구] homesick 향수병에 걸린

[해설] 도시로 이사 가서 다른 일을 하자는 여자의 의견에 대해 남자가 만류하고 있는 상황에 어울리는 대답을 찾는 문제이다.

17. [출제의도] 담화의 상황에 알맞게 말하기

W: In history class students take turns to present their homework in front of the class. As usual one of our class mates is presenting her homework very eagerly and each student is paying attention to her presentation. She is making a presentation about famous historical sites. It is an interesting topic and everyone is enjoying that class. But at the moment there is a melody coming from somewhere. Everyone, including the history teacher, is surprised at the sound. It is coming from Toby's school bag. He was too busy this morning and left his cell phone on. In this situation, what would Toby most likely say to the teacher?

[어구] historical sites 역사적인 유적지

[해설] 역사시간에 실수로 핸드폰을 켜 채로 수업을 받다가 전화벨이 울렸으므로 이 상황에 Toby가 선생님께 할 수 있는 사과와 말을 찾는 문제이다.

[읽 기]

18. [출제의도] 설명하는 대상 파악하기

[해석]

많은 과학자들과 전문가들이 이것을 연구하지만 이것이 우리 주변에 있고 우리 안에 있다는 것을 알기 위해서 과학자가 될 필요는 없다. 인간, 나무, 물, 햇빛, 공기, 식물 그리고 우주에 있는 모든 다른 것들도 이것으로 만들어져있다. 과학시간에 우리는 이것이 결코 창조되거나 파