

이름: \_\_\_\_\_

수험번호: \_\_\_\_\_

1.  $x, y$ 에 대한 연립일차방정식  $\begin{pmatrix} a-1 & 1 \\ a & b-2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} x \\ y \end{pmatrix}$ 가  $x=0, y=0$  이외의 해를 가지도록 하는 정수  $a, b$ 에 대하여  $ab$ 의 최솟값을 구하여라.

2. 갓 태어난 암수 한 쌍의 토끼가 있다. 암수 한 쌍의 토끼는 생후 2개월 부터 매월 암수 한 쌍의 토끼를 낳는다고 한다. 이와 같이 계속될 때  $n$ 개월 후 토끼 쌍의 수를  $a_n$ 이라 놓자. 단, 모든 토끼가 죽지 않는다고 가정하자. 수열  $\{a_n\}$ 의 일반항을 구하시오.

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1.  $x, y$ 에 대한 연립일차방정식  $\begin{pmatrix} a-1 & 6 \\ 1 & a-2 \end{pmatrix} \begin{pmatrix} x \\ y \end{pmatrix} = \begin{pmatrix} 3-x \\ 1-y \end{pmatrix}$ 는  
 $a=p$ 일 때 해가 존재하지 않고,  $a=q$ 일 때 무수히 많은 해가 존재한다.  
 이 때, 행렬  $(p \ q) \begin{pmatrix} p \\ -1 \end{pmatrix}$ 의 성분의 값을 구하여라.

2. 베트남의 수도 하노이의 어느 사원에 높이 50cm 정도의 다이아몬드  
 막대 A,B,C 3개가 있다. 막대 A에만 구멍 뚫린 12장의 각각 크기가  
 다른 순금 원판이 큰 것부터 아래에 놓이도록 차례로 쌓여 있다.  
 막대 A의 원판들을 비어 있는 막대 B에 모두 쌓으려고 한다.  
 이 때, 지켜야 할 규칙은,  
 1) 원판은 한 번에 한 개씩 옮겨야 하고,  
 2) 절대로 작은 원판 위에 큰 원판을 올려놓을 수 없다.  
 원판 12장을 모두 막대 A에서 B로 옮겨놓기 위해서는 원판을 몇 번  
 움직여야 하는가?

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※ 다음 글을 읽고 물음에 답하시오.

In the past 30 years, Americans—particularly young Americans—have become risk-averse and sedentary.\* The timing is terrible. With a considerably high unemployment rate, young Americans are less inclined to pack up and move to sunnier economic climes.\* The likelihood of 20-somethings moving to another state has dropped well over 40 percent since the 1980s, according to Census Bureau data. The proportion of young adults living at home nearly doubled between 1980 and 2008. Even bicycle sales are lower now than they were in 2000. Most startlingly, an increasing number of teenagers are not even bothering to get their driver's licenses. Back in the early 1980s, 80 percent of 18-year-olds proudly strutted out of the DMV\* with newly minted licenses. By 2008, that number had dropped to 65 percent. Perhaps young people are too happy at home checking Facebook. A study of 15 countries found that when young people spend more time on the Internet, they delay getting their driver's licenses.

The Great Recession\* and the still weak economy make the trend toward risk aversion\* worse. Children raised during recessions ultimately take fewer risks with their investments and their jobs. Even when the recession passes, they don't strive as hard to find new jobs, and they hang on to lousy\* jobs longer. Perhaps more worrisome, kids who grow up during tough economic times also tend to believe that luck plays a bigger role in their success, which breeds complacency.\* They end up less adventurous and less willing to leave home because they believe that luck counts more than effort. Notice how popular the word "random" has become among young people. The word has changed from a precise statistical term to an all-purpose phrase that stresses the illogic and coincidence of life. Unfortunately, societies that emphasize luck over logic are not likely to thrive. Maybe it's time to pull out the power cords and pump up the flat bicycle tires—or whatever it takes to get the kids back on the road.

\*sedentary 정적인      \*clime 지역      \*DMV Department of Motor Vehicles

\*The Great Recession 2008년부터 시작된 세계적 경기불황

\*aversion 싫어함      \*lousy 변변치 않은      \*complacency 자기위안

&lt;문제 1&gt; 필자가 자전거 판매량과 운전면허 취득률을 언급한 이유를 설명하시오.

<문제 2> 밑줄 친 "random"이라는 단어로 대변되는 요즘 젊은이들의 생각을 기술하고, 이에 대한 자신의 견해를 말해보시오.

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A controversial issue for many Americans is whether people who are known to be racist or to have other destructive views should be allowed to speak at public places like state universities. Even those who cherish the American Constitution and its guarantee of free speech have difficulty supporting free speech for bigots.\* However, painful as it may be to accept, freedom of speech is an all-or-nothing proposition. You can't have freedom of speech for some people and not for others. If you ban unpopular people from speaking, you no longer have freedom of speech.

As the A.C.L.U.\* has argued, the best way to respond to hatred and bigotry is to have more speech, not less. How this principle works in practice can be illustrated by an incident involving David Duke, a man who was once a leader of the Ku Klux Klan.\*

In 1996, Duke was invited to the University of California in order to debate affirmative action.\* The invitation caused an uproar in both the university and the community. One local editorial labeled Duke's views beyond the limits of legitimate discussion. Even the governor of the state agreed that Duke's invitation should be withdrawn. The president of the university, however, argued that public institutions must be places where all ideas can be explored. In addition, members of African-American organizations argued that Duke should be allowed to speak because they wanted the opportunity to challenge him in person.

As a result of those arguments, the debate took place. Even more important, it took place peacefully. The president of the university courageously held her ground in refusing to interfere with the students' decision to invite Duke to speak and thus refusing to limit one of the most precious rights. After all, once the first speaker is banned, it becomes a little too easy to ban the second. Hard as it is to accept, it's still true that "you either have free speech or you don't."

\*bigot 편견이 심한 사람, \*A.C.L.U 미국 자유 인권 협회

\*Ku Klux Klan 백인우월주의 단체

\*affirmative action 소수민족과 여성에 대한 차별 철폐 조치

&lt;문제 1&gt; 필자가 David Duke를 언급한 이유가 무엇인지 말해보시오.

<문제 2> 밑줄 친 "you either have free speech or you don't."가 무슨 뜻인지 풀어서 설명하고 이에 대한 자신의 견해를 말해보시오.