## 3.1절 확인문제

**01.** $45$

**02.** $a_{10}=25,\ S_{10}=115$

**03.** $4S_8=1275$

**04.** (a) 5675 (b) 1033

**05.** (a) $a_n=\frac{1}{n}a_1$ (b) $a_n=2^{n-1}+1$

## 3.2절 확인문제

**01.** (a) $-\infty$ (b) $0$ (c) $\frac{1}{4}$

**02.** $\frac{2}{3}$

**03.** (a) $0$ (b) $\infty$

**04.** $\frac{2}{3}$

**05.** (a) $\frac{1}{\sqrt{2}}$ (b) $\frac{24}{5}$

## 3.3절 확인문제

**01.** (거짓)

**02.** 존재하지 않는다.

**03.** (a) $\frac{242}{9}$ (b) $\infty$

**04.** $\frac{25}{4}$

**05.** $\lim_{x \to 1} f(x) = 5$

## 3.4절 확인문제

**01.** (거짓)

**02.** (a) 함수 $f(x)$는 $x=1$에서 불연속 (b) $g(x)$는 $x=1$에서 연속

**03.** $a=-1,\ b=-2$

**04.** (a) $x=-1$에서 최솟값 $f(-1)=-1$, $x=2$에서 최댓값 $f(2)=8$
(b) $x=2$에서 최솟값 $g(2)=-\log_2 5$, $x=-1$에서 최댓값 $g(-1)=\log_{\frac{1}{2}} 2=-1$

**05.** 생략

# 3장 연습문제

**01.** $a_{30} = 54$

**02.** (a) $x = 7, y = 13$ (b) $x = 48,\ y = 27$ 또는 $x = -48, y = -27$

**03.** (a) 13439원 (b) 268700원

```
# (a)
ans_a = 10000*(1.03)**10
print("The answer for (a) is ", ans_a)

# (b)
ans_b = 10000*(1.03)
for n in range(2,21):
        ans_b = ans_b + 10000*(1.03)**n
print("The answer for (b) is ", ans_b)
```

**04.** (a) 2660 (b) 2964

```
# (a)
ans_a = 1*2
for k in range(2,20):
        ans_a = ans_a + k*(k+1)
print("The answer for (a) is ", ans_a)

# (b)
ans_b = 3**3-3
for k in range(4,11):
        ans_b = ans_b + (k**3-k)
print("The answer for (b) is ", ans_b)
```

**05.** 생략

**06.** (a) $a_n = \dfrac{1}{2n-1}$ (b) $a_n = 3 \cdot 2^{n-1} - 2$

```
# (a)
a1 = 1
an = a1
for n in range(2,101):
        anp1 = an/(2*an+1)
        an = anp1
print("a_100 : ", anp1)

# (b)
a1 = 1
a2 = 4
an = a1
anp1 = a2
for k in range(3,101):
        anp2 = 3*anp1-2*an
        an   = anp1
        anp1 = anp2
print("a_100 : ", anp2)
```

**07.** $a_n = 2n-3 \ (n \geq 2)$

**08.** 생략

```
c = 2.5 # 임의의 실수를 선택하면서 확인해보기!
N = 101 # 임의의 자연수를 선택하면서 확인해보기! (너무 큰 숫자를 하면 Overflow 발생)
for n in range(1,N):
        if (1+c)**n<(1+n*c):
                print("The given statement is FALSE!")

print("(1+c)^n >= 1+n*c")
```

**09.** 생략

**10.** (a) 생략 (b) 1

**11.** (a) 생략 (b) $\sum_{n=1}^{\infty} S_n = \frac{3\sqrt{3}}{4}$

**12.** (a) 16 (b) $\frac{3}{2}$

**13.** (a) 생략 (b) $a = 6\sqrt{2}$, $b = -12$

**14.** $\lim_{x \to 1} \frac{3f(x)+4}{5g(x)-2} = -\frac{13}{7}$

**15.** $f(4) = 51$

**16.** $\lim_{x \to 1+} f(g(x)) = 2$, $\lim_{x \to 1-} f(g(x)) = 1$

**17.** $f(3) + f(1) = 12$

**18.** 2개

```
import numpy as np
import matplotlib.pyplot as plt
x = np.linspace(-2,2,401)
fx = np.zeros_like(x)
for i in range(0,401):
        if np.abs(x[i]) < 1:
                fx[i] =     0
        elif x[i] ==  1:
                fx[i] =  0.5
        elif x[i] == -1:
                fx[i] = -0.5
        else:
                fx[i] = x[i]
plt.plot(x,fx,'.')
plt.show()
```

**19.** $1 < k < 6$

**20.** 생략