1. $1+\frac{1}{1+2}+\frac{1}{1+2+3}+\cdots+\frac{1}{1+2+3+\cdots+10}$ 의 값은?

① $\frac{9}{10}$ ② $\frac{11}{10}$ ③ $\frac{10}{11}$ ④ $\frac{20}{11}$ ⑤ $\frac{11}{20}$

2. 수열 $\frac{1}{2}, \frac{1}{6}, \frac{1}{12}, \frac{1}{20}, \frac{1}{30}, \cdots$ 의 첫째항부터 제 50까지의 합은?

① $\frac{48}{49}$ ② $\frac{50}{49}$ ③ $\frac{49}{50}$ ④ $\frac{51}{50}$ ⑤ $\frac{50}{51}$

3. 다음 식의 값은?

$$\boxed{\frac{1}{1+\sqrt{2}}+\frac{1}{\sqrt{2}+\sqrt{3}}+\frac{1}{\sqrt{3}+\sqrt{4}}+\cdots+\frac{1}{\sqrt{99}+\sqrt{100}}}$$

① 9　② $3\sqrt{11}-\sqrt{2}$　③ $\sqrt{99}-1$

④ $\sqrt{101}-1$　⑤ 11

4. $\sum_{k=1}^{n} \frac{1}{\sqrt{k}+\sqrt{k+1}}$의 값은?

① $\sqrt{n-1}-1$ ② $\sqrt{n+1}-1$ ③ $\sqrt{n+1}$

④ $\sqrt{n+1}+1$ ⑤ $\sqrt{2n+1}+1$

5. $1+\frac{1}{1+2}+\frac{1}{1+2+3}+\cdots+\frac{1}{1+2+\cdots+2015}$ 의 값은?

① $\frac{2014}{2015}$ ② $\frac{2015}{2016}$ ③ $\frac{2015}{1008}$ ④ $\frac{2014}{1008}$ ⑤ 2

6. 함수 $f(n) = 1^2 + 2^2 + 3^2 + \cdots + n^2$에 대하여 $\sum_{k=1}^{20} \dfrac{2k+1}{f(k)}$의 값은?

① $\dfrac{40}{7}$ ② $\dfrac{45}{8}$ ③ $\dfrac{17}{3}$ ④ $\dfrac{57}{10}$ ⑤ $\dfrac{63}{11}$

7. 수열의 합 $\sum_{k=1}^{n} \frac{2}{k(k+1)(k+2)}$ 의 값은?

① $\frac{n(n-3)}{(n+1)(n+2)}$

② $\frac{n(n+3)}{2(n+1)(n+2)}$

③ $\frac{n(n+6)}{3(n+1)(n+2)}$

④ $\frac{2n(n+3)}{(n+1)(n+3)}$

⑤ $\frac{n(n+1)}{4(n+1)(n+2)}$

8. $\frac{1}{3^2-1}+\frac{1}{5^2-1}+\frac{1}{7^2-1}+\cdots+\frac{1}{21^2-1}$ 의 값은?

① $\frac{1}{22}$ ② $\frac{3}{22}$ ③ $\frac{5}{22}$ ④ $\frac{7}{22}$ ⑤ $\frac{9}{22}$

9. $1+\frac{1}{1+2}+\frac{1}{1+2+3}+\cdots+\frac{1}{1+2+3+\cdots+n}$의 값을 구하면?

① $\frac{n}{n+1}$　② $\frac{2n}{n+1}$　③ $\frac{3n}{n+1}$　④ $\frac{4n}{n+1}$　⑤ $\frac{5n}{n+1}$

10. $S=\frac{1}{1\cdot 2}+\frac{1}{2\cdot 3}+\frac{1}{3\cdot 4}+\cdots+\frac{1}{19\cdot 20}$ 일 때, $100S$ 의 값은?

① 95　② 100　③ 105　④ 110　⑤ 115

11. $\sum_{k=1}^{n} \dfrac{1}{(2k-1)(2k+1)}$ 의 값은?

① $\dfrac{1}{n+1}$ ② $\dfrac{2n}{n+1}$ ③ $\dfrac{n}{2n+1}$

④ $\dfrac{n}{n+2}$ ⑤ $\dfrac{2n}{2n+1}$

12. $\sum_{k=1}^{49} \frac{1}{\sqrt{k} + \sqrt{k+1}} = a\sqrt{2} + b$일 때, $a + b$의 값은?

① 1 ② 2 ③ 3 ④ 4 ⑤ 5

13. $\sum_{k=1}^{80}(\sqrt{k}-\sqrt{k+1})$의 값은?

① -5 ② -7 ③ -8 ④ -79 ⑤ -80

14. $\frac{1}{1\cdot 3}+\frac{1}{2\cdot 4}+\frac{1}{3\cdot 5}+\cdots+\frac{1}{n(n+2)}$ 의 값은?

① $\frac{n(3n+5)}{4(n+1)(n+2)}$

② $\frac{n(3n+5)}{4(2n+1)(n+2)}$

③ $\frac{n(3n+5)}{(n+1)(n+2)}$

④ $\frac{n(3n+4)}{4(n+1)(n+2)}$

⑤ $\frac{n(3n+4)}{2(n+1)(n+2)}$

15. $\frac{1}{1\cdot 3}+\frac{1}{3\cdot 5}+\frac{1}{5\cdot 7}+\cdots+\frac{1}{(2n-1)(2n+1)}$의 값은?

① $\frac{n}{2n-1}$ ② $\frac{2n}{2n-1}$ ③ $\frac{n}{2n+1}$

④ $\frac{2n}{2n+1}$ ⑤ $\frac{n}{2n+3}$

16. $\sum_{k=1}^{n} \frac{1}{4k^2-1}$ 의 값은?

① $\frac{1}{n+1}$ ② $\frac{n}{n+1}$ ③ $\frac{2n}{n+1}$

④ $\frac{n}{2n+1}$ ⑤ $\frac{2n}{2n+3}$

17. $\frac{1}{2}+\frac{1}{6}+\frac{1}{12}+\frac{1}{20}+\frac{1}{30}$ 의 값은?

① $\frac{1}{6}$　② $\frac{1}{3}$　③ $\frac{1}{2}$　④ $\frac{2}{3}$　⑤ $\frac{5}{6}$

18. $\sum_{k=1}^{n} \frac{1}{k^2+k}$ 의 값은?

① $\frac{1}{n+1}$ ② $\frac{n}{n+1}$ ③ $\frac{2n}{n+1}$
④ $\frac{2n}{2n+1}$ ⑤ $\frac{2n}{2n+3}$

19. 수열 $\frac{1}{2^2-1}, \frac{1}{3^2-1}, \frac{1}{4^2-1}, \frac{1}{5^2-1}, \cdots$ 의 첫째항부터 제 n항까지의 합을 구하면?

① $\frac{n+2}{2(n+1)}$

② $\frac{2n}{(n+1)(n+2)}$

③ $\frac{n(3n+5)}{4(n+1)(n+2)}$

④ $\frac{2n+5}{2(n+3)}$

⑤ $\frac{2n(n+1)}{(n+3)(n+5)}$

20. $\sum_{k=1}^{n} a_k = n^2 + 3n$ 일 때, $\sum_{k=1}^{10} \frac{1}{a_k a_{k+1}}$ 의 값은?

① $\frac{1}{24}$ ② $\frac{1}{48}$ ③ $\frac{5}{16}$ ④ $\frac{5}{24}$ ⑤ $\frac{5}{48}$

21. $\sum_{k=1}^{n} \frac{1}{(2k-1)(2k+1)}$ 의 값은?

① $\frac{1}{n+1}$　　② $\frac{2n}{n+1}$　　③ $\frac{n}{2n+1}$

④ $\frac{n}{n+2}$　　⑤ $\frac{2n}{2n+1}$

22. $\sum_{k=1}^{200} \frac{1}{k(k+1)}$ 의 값은?

① $\frac{101}{100}$ ② $\frac{100}{101}$ ③ $\frac{200}{201}$ ④ $\frac{110}{101}$ ⑤ $\frac{201}{200}$