

受験算数の計算達人～第11回キセル算（部分分数分解）～

氏名： 解答・解説

$$\begin{aligned}
 (1) \quad & \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \frac{1}{5 \times 6} + \frac{1}{6 \times 7} \\
 &= \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} \\
 &= \frac{1}{3} - \frac{1}{7} \\
 &= \frac{7}{21} - \frac{3}{21} \\
 &= \frac{4}{21}
 \end{aligned}
 \qquad
 \begin{aligned}
 (2) \quad & \frac{2}{1 \times 3} + \frac{2}{3 \times 5} + \frac{2}{5 \times 7} + \dots + \frac{2}{19 \times 21} \\
 &= \frac{1}{1} - \frac{1}{3} + \frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} + \dots + \frac{1}{19} - \frac{1}{21} \\
 &= \frac{1}{1} - \frac{1}{21} \\
 &= \frac{21}{21} - \frac{1}{21} \\
 &= \frac{20}{21}
 \end{aligned}$$

$$\begin{aligned}
 (3) \quad & \frac{3}{3 \times 4} + \frac{3}{4 \times 5} + \frac{3}{5 \times 6} + \frac{3}{6 \times 7} \\
 &= \left( \frac{1}{3 \times 4} + \frac{1}{4 \times 5} + \frac{1}{5 \times 6} + \frac{1}{6 \times 7} \right) \times 3 \\
 &= \left( \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} \right) \times 3 \\
 &= \left( \frac{1}{3} - \frac{1}{7} \right) \times 3 \\
 &= \left( \frac{7}{21} - \frac{3}{21} \right) \times 3 \\
 &= \frac{4}{21} \times 3 \\
 &= \frac{4}{7}
 \end{aligned}
 \qquad
 \begin{aligned}
 (4) \quad & \frac{1}{1 \times 3} + \frac{1}{3 \times 5} + \frac{1}{5 \times 7} + \frac{1}{7 \times 9} \\
 &= \left( \frac{2}{1 \times 3} + \frac{2}{3 \times 5} + \frac{2}{5 \times 7} + \frac{2}{7 \times 9} \right) \div 2 \\
 &= \left( \frac{1}{1} - \frac{1}{3} + \frac{1}{3} - \frac{1}{5} + \frac{1}{5} - \frac{1}{7} + \frac{1}{7} - \frac{1}{9} \right) \div 2 \\
 &= \left( \frac{1}{1} - \frac{1}{9} \right) \div 2 \\
 &= \left( \frac{9}{9} - \frac{1}{9} \right) \div 2 \\
 &= \frac{8}{9} \times \frac{1}{2} \\
 &= \frac{4}{9}
 \end{aligned}$$

$$\begin{aligned}
 (5) \quad & \frac{1}{12} + \frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \frac{1}{56} + \frac{1}{72} \\
 & \quad \quad \quad \frac{1}{3 \times 4} \quad \frac{1}{4 \times 5} \quad \frac{1}{5 \times 6} \quad \frac{1}{6 \times 7} \quad \frac{1}{7 \times 8} \quad \frac{1}{8 \times 9} \\
 &= \frac{1}{3} - \frac{1}{4} + \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \frac{1}{7} - \frac{1}{8} + \frac{1}{8} - \frac{1}{9} \\
 &= \frac{1}{3} - \frac{1}{9} \\
 &= \frac{3}{9} - \frac{1}{9} \\
 &= \frac{2}{9}
 \end{aligned}$$

★ポイント!  
 $\frac{\square - \triangle}{\square \times \triangle} = \frac{1}{\square} - \frac{1}{\triangle}$   
 ( $\square < \triangle$ )