150. *Find the value of* $[999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + \cdots \ldots \ldots + 999\frac{6}{7}]$?

$[999\frac{1}{7} + 999\frac{2}{7} + 999\frac{3}{7} + \cdots \ldots \ldots + 999\frac{6}{7}]$ का मान ज्ञात कीजिये?

[A] 5994 [B] 5995

[C] 5997 [D] 5998

$= 999 \times 6 + \frac{(1+2+3+4+5+6)}{7}$

$= 5994 + 3$

$$5\frac{2}{7} = 5 + \frac{2}{7} = \frac{37}{7}$$

151. *What is the value of* $99\frac{11}{99} + 99\frac{13}{99} + 99\frac{15}{99} + \cdots + 99\frac{67}{99}$?

$99\frac{11}{99} + 99\frac{13}{99} + 99\frac{15}{99} + \cdots + 99\frac{67}{99}$ **का मान क्या है?**

[A] 94220/33 **[B]** 96220/33

[C] 97120/33 **[D]** 95120/33

$S_n = \frac{n}{2}(a+l)$

$= 99 \times 29 + \frac{(11+13+15+\cdots+67)}{99}$

$= 99 \times 29 + \frac{\frac{29}{2} \times 78^{13}}{99_{33}}$

$= 99 \times 29 + \frac{29 \times 13}{33}$

153. $9\frac{1}{9} + 99\frac{2}{9} + 999\frac{3}{9} + 9999\frac{4}{9} + 99999\frac{5}{9} + 999999\frac{6}{9} + 9999999\frac{7}{9} + 99999999\frac{8}{9}$

[A] 111111106
[B] 111111107
[C] 111111105
[D] 1111111060

$= 9 \times (1 + 11 + 111 + \ldots\ldots + 11111111) + \frac{36}{9}$ (4)

$= 9 \times 12345678 + 4$

152. *What is the value of* $2010\frac{2009}{2010} \times 2011\frac{2009}{2010} - 2009\frac{2009}{2010} \times 2012\frac{2009}{2010}$?

$2010\frac{2009}{2010} \times 2011\frac{2009}{2010} - 2009\frac{2009}{2010} \times 2012\frac{2009}{2010}$ **का मान क्या है?**

[A] 2010 **[B]** 2011

[C] 2 **[D]** 4

$२०१०\frac{२००९}{२०१०} = x$ माना

$= x(x+1) - (x-1)(x+2)$

$= x^2 + x - (x^2 + x - 2) = 2$

‘series श्रेणी’

#

$$\frac{1}{1*2}+\frac{1}{2*3}+\frac{1}{3*4}+\frac{1}{4*5}+\frac{1}{5*6}=\frac{1}{1}\left[1-\frac{1}{6}\right]=\frac{5}{6}$$

$$\frac{2-1}{1\times2}+\frac{3-2}{2\times3}+\frac{4-3}{3\times4}+\frac{5-4}{4\times5}+\frac{6-5}{5\times6}$$

$$=1-\frac{1}{2}+\frac{1}{2}-\frac{1}{3}+\frac{1}{3}-\frac{1}{4}+\frac{1}{4}-\frac{1}{5}+\frac{1}{5}-\frac{1}{6}$$

$$=1-\frac{1}{6}=\frac{5}{6}$$

$3*7$, $7*11$, $11*15$

$$\left[\frac{1}{3*7}+\frac{1}{7*11}+\frac{1}{11*15}+\cdots+\frac{1}{899*903}\right]=\frac{1}{4}\left[\frac{1}{3}-\frac{1}{903}\right]$$

(a) $\frac{21}{509}$ (b) $\frac{18}{403}$ (c)

$$=\frac{1}{4}\left[\frac{4}{3*7}+\frac{4}{7*11}+\frac{4}{11*15}+\cdots+\frac{4}{899*903}\right]$$

$$=\frac{1}{4}\left[\frac{7-3}{3*7}+\frac{11-7}{7*11}+\frac{15-11}{11*15}+\cdots+\frac{903-899}{899*903}\right]$$

BASIC

$$=\frac{1}{4}\left[\frac{1}{3}-\frac{1}{7}+\frac{1}{7}-\frac{1}{11}+\frac{1}{11}-\frac{1}{15}+\cdots+\frac{1}{899}-\frac{1}{903}\right]$$

$$=\frac{1}{4}\left[\frac{1}{3}-\frac{1}{903}\right]=\frac{1}{4}\times\frac{300}{903}=\frac{25}{301}$$

$$=\frac{1}{\text{diff.b/w twoconsecutive terms in deno}}\left[\frac{1}{3}-\frac{1}{903}\right]$$

154. $\frac{1}{1*2} + \frac{1}{2*3} + \frac{1}{3*4} + \cdots \ldots \ldots \ldots \ldots + \frac{1}{99*100} = ?$

[A] $\frac{99}{100}$

[B] $\frac{98}{99}$

[C] $\frac{100}{101}$

[D] $\frac{97}{100}$

$$= \frac{1}{1}\left[\frac{1}{1} - \frac{1}{100}\right]$$

$$= \frac{99}{100}$$

155. If $\frac{1}{1\times2}+\frac{1}{2\times3}+\frac{1}{3\times4}+\cdots\ldots\ldots+\frac{1}{n(n+1)}=\frac{249}{250}$ then what is the value of n?

यदि $\frac{1}{1\times2}+\frac{1}{2\times3}+\frac{1}{3\times4}+\cdots\ldots\ldots+\frac{1}{n(n+1)}=\frac{249}{250}$ है तो n का मान ज्ञात करो।

[A] 299

[B] 249

[C] 250

[D] 248

$\left[\frac{1}{1}-\frac{1}{n+1}\right]$

$= \frac{n}{n+1}=\frac{249}{250}$

156. $\frac{1}{3*7} + \frac{1}{7*11} + \frac{1}{11*15} + \cdots + \frac{1}{899*903} = ?$

[A] $\frac{21}{509}$

[B] $\frac{18}{403}$

[C] $\frac{25}{301}$

[D] $\frac{29}{31}$

157. If $a_1=\frac{1}{2*5}$, $a_2=\frac{1}{5*8}$, $a_3=\frac{1}{8*11}$ then, $a_1+a_2+a_3+.....+a_{100}$ =?

[A] $\frac{25}{151}$ ✓✓

[B] $\frac{30}{157}$

[C] $\frac{1}{4}$

[D] $\frac{9}{55}$

$$a_1+a_2+a_3+\cdots\cdots+a_{100}$$

$$=\frac{1}{2\times5}+\frac{1}{5\times8}+\frac{1}{8\times11}+\cdots\cdots+\frac{1}{299\times302}$$

$$=\frac{1}{3}\left[\frac{1}{2}-\frac{1}{302}\right]$$

$$=\frac{1}{3}\times\frac{[151-1]}{302}=\frac{25}{151}$$

158. $\frac{1}{7^2-3^2} + \frac{1}{13^2-3^2} + \frac{1}{19^2-3^2} + \ldots\ldots + \frac{1}{49^2-3^2} = ?$

[A] $\frac{1}{26}$

[B] $\frac{3}{52}$

[C] $\frac{1}{13}$

[D] $\frac{3}{26}$

$$= \frac{1}{4\times10} + \frac{1}{10\times16} + \frac{1}{16\times22} + \ldots\ldots + \frac{1}{46\times52}$$

$$= \frac{1}{6}\left[\frac{1}{4} - \frac{1}{52}\right]$$

$$= \frac{1}{6} \times \frac{12}{52} = \frac{1}{26}$$

159. $\frac{1}{20}+\frac{1}{30}+\frac{1}{42}+\frac{1}{56}+\frac{1}{72}+\frac{1}{90}+\frac{1}{110}+\frac{1}{132}=?$

$= \frac{1}{4\times5}+\frac{1}{5\times6}+\frac{1}{6\times7}+\cdots\cdots\cdots+\frac{1}{11\times12}$

$= \frac{1}{1}\left[\frac{1}{4}-\frac{1}{12}\right]$

$= \frac{2}{12}=\frac{1}{6}$ ✓

160. *Evaluate:* $\frac{1}{15}+\frac{1}{35}+\frac{1}{63}+\frac{1}{99}+\frac{1}{143}$.

$\frac{1}{15}+\frac{1}{35}+\frac{1}{63}+\frac{1}{99}+\frac{1}{143}$ का मान ज्ञात कीजिए।

[A] $\frac{4}{39}$

[B] $\frac{7}{39}$

[C] $\frac{5}{39}$

[D] $\frac{10}{39}$

$\frac{1}{3\times5}+\frac{1}{5\times7}+\cdots\cdots+\frac{1}{11\times13}$

$=\frac{1}{2}\left[\frac{1}{3}\times\frac{1}{13}\right]=\frac{1}{2}\times\frac{10}{39}=\frac{5}{39}$

161. $\frac{1}{1+2}+\frac{1}{1+2+3}+\frac{1}{1+2+3+4}+\cdots\cdots+\frac{1}{1+2+3+\cdots 51}=?$

[A] $\frac{26}{25}$

[B] $\frac{25}{26}$

[C] $\frac{15}{17}$

[D] $\frac{6}{7}$

$$= \frac{2}{2\times3}+\frac{2}{3\times4}+\frac{2}{4\times5}+\cdots\cdots+\frac{2}{51\times52}$$

$$= 2\times\left[\frac{1}{2}-\frac{1}{52}\right]$$

$$= 1-\frac{1}{26}=\frac{25}{26}$$

62. **Find x, if** $x + \frac{x}{1+2} + \frac{x}{1+2+3} + \ldots\ldots\ldots\ldots + \frac{x}{1+2+3+\cdots\ldots 4041} = 4041$?

x ज्ञात कीजिये, यदि $x + \frac{x}{1+2} + \frac{x}{1+2+3} + \ldots\ldots\ldots\ldots + \frac{x}{1+2+3+\cdots\ldots 4041} = 4041$

[A] 2021 **[B] 2070**

[C] 2650 **[D] 2020**

$$x + \left[\frac{2x}{2\times3} + \frac{2x}{3\times4} + \cdots\cdots + \frac{2x}{4041\times4042}\right]$$

$$= x + 2x\cdot\left[\frac{1}{2} - \frac{1}{4042}\right] = 4041$$

$$= x + x\cdot\frac{2020}{2021} = 4041$$

$$\frac{4041x}{2021} = 4041$$

$$x = 2021$$

163. $\frac{1}{8}+\frac{1}{15}+\frac{1}{24}+\frac{1}{35}+\frac{1}{48}+\cdots\ldots\ldots\ldots\ldots+\frac{1}{528}+\frac{1}{575}=?$

[A] 1/3

[B] 451/1200

[C] 255/1024

[D] 163/432

$$=\left[\frac{1}{2\times4}+\frac{1}{4\times6}+\frac{1}{6\times8}+\cdots\cdots\cdots+\frac{1}{22\times24}\right]+\left[\frac{1}{3\times5}+\frac{1}{5\times7}+\cdots\cdots+\frac{1}{23\times25}\right]$$

$$=\frac{1}{2}\left[\frac{1}{2}-\frac{1}{24}\right]+\frac{1}{2}\left[\frac{1}{3}-\frac{1}{25}\right]$$

$$=\frac{11}{48}+\frac{11}{75}=11\times\frac{41}{1200}=\frac{451}{1200}$$