

7 $\underbrace{3 \cdot 2 + 6 \cdot 3 + 9 \cdot 4 + \dots + 3(k+1)(k+2)}_{\text{הצטרף לזו}} \stackrel{?}{=} (k+1)(k+2)(k+3)$ $n=k+1$ נ"ל

$1 \cdot 2(k+1)(k+2) + 3(k+1)(k+2) \stackrel{?}{=} (k+1)(k+2)(k+3)$

$\underbrace{(k+1)(k+2)}_{\text{למול אלו}} (k+3) = (k+1)(k+2)(k+3)$

18 $\underbrace{1(1+m) + 2(2+m) + \dots + k(k+m) + (k+1)(m+k+1)}_{\text{הצטרף לזו}} \stackrel{?}{=} \frac{k+1}{6} (k+2)(2k+3+3m)$ $n=k+1$ נ"ל

$\frac{k}{6} (k+1)(2k+1+3m) + (k+1)(m+k+1) \stackrel{?}{=} \frac{k+1}{6} (2k^2 + 4k+3k+6 + 3mk+6m)$

$\frac{k+1}{6} [k(2k+1+3m) + 6(m+k+1)] \stackrel{?}{=} \frac{k+1}{6} [2k^2 + k + 6 + 3mk + 6m]$

$\frac{k+1}{6} (2k^2 + k + 3mk + 6m + 6k + 6) = \frac{k+1}{6} (2k^2 + 7k + 6 + 3mk + 6m)$

26 $\underbrace{1 \cdot 2 \cdot 3 \cdot 4 + \dots + k(k+1)(k+2)(k+3) + (k+1)(k+2)(k+3)(k+4)}_{\text{הצטרף לזו}} \stackrel{?}{=} \frac{k+1}{5} (k+2)(k+3)(k+4)(k+5)$ $n=k+1$ נ"ל

$\frac{k}{5} (k+1)(k+2)(k+3)(k+4) + (k+1)(k+2)(k+3)(k+4) \stackrel{?}{=} \frac{k+1}{5} (k+2)(k+3)(k+4)(k+5)$ "

$\frac{(k+1)(k+2)(k+3)(k+4)}{5} [k+5] = \frac{k+1}{5} (k+2)(k+3)(k+4)(k+5)$

32 $\underbrace{\frac{1}{1 \cdot (m+1)} + \frac{1}{(m+1)(2m+1)} + \dots + \frac{1}{(k-1)(m+1)(km+1)} + \frac{1}{(km+1)((k+1)m+1}}_{\text{הצטרף לזו}} \stackrel{?}{=} \frac{k+1}{(k+1)m+1}$ $n=k+1$ נ"ל

$\frac{k}{km+1} + \frac{1}{(k+1)((k+1)m+1)} \stackrel{?}{=} \frac{k+1}{(k+1)m+1}$

$\frac{1}{(km+1)} \left[k + \frac{1}{(k+1)m+1} \right] \stackrel{?}{=} \frac{k+1}{(k+1)m+1}$

$\frac{1}{km+1} \left(\frac{km((k+1)m+1) + k+1}{(k+1)m+1} \right) = \frac{k+1}{(k+1)m+1}$

40 $\frac{1}{1 \cdot 3 \cdot 5} + \frac{2}{3 \cdot 5 \cdot 7} + \dots + \frac{k}{(2k-1)(2k+1)(2k+3)} + \frac{k+1}{(2k+1)(2k+3)(2k+5)} \stackrel{?}{=} \frac{(k+2)(k+3)}{2(2k+3)(2k+5)}$ $n=k+1$ נ"ל

$\frac{k(k+1)}{2(2k+1)(2k+3)} + \frac{k+1}{(2k+1)(2k+3)(2k+5)} \stackrel{?}{=} \frac{k+1}{2(2k+3)(2k+5)}$

$\frac{k+1}{(2k+1)(2k+3)} \left[\frac{k}{2} + \frac{1}{2k+5} \right] = \frac{k+1}{(2k+1)(2k+3)} \left(\frac{2k^2 + 5k + 2}{2(2k+5)} \right) \stackrel{?}{=} \frac{k+1}{2(2k+3)(2k+5)}$ "

$\frac{(k+1)(2k^2 + 5k + 2)}{(2k+1)(2k+3)2(2k+5)} = \frac{(k+1)[2k(k+2) + (k+2)]}{(2k+1)(2k+3)2(2k+5)} = \frac{(k+1)(2k+1)(k+2)}{(2k+1)(2k+3)2(2k+5)} = \frac{(k+1)(k+2)}{2(2k+3)(2k+5)}$

<http://heshbonia.com> 7 תורת המספרים
 n=k+1 נ"ל