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ln[11]:= sumowanie1[podstawa_, wykladnik_] :=
Module[{n = podstawa, s = wykladnik}, Sum[(n*(n+1)*(n+2))^s, {n, 1, n}]]
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ln[12]:= sumowanie2[wykladnik_] :=
Module[{n = n, s = wykladnik}, Sum[(n*(n+1)*(n+2))^s, {n, 1, n}]]
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ln[13]:= For[i = 1, i ≤ 10, i++, Print["Suma k^:", i, " = ", Expand[sumowanie2[i]]]]
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$$\text{Suma } k^1 = \frac{3n}{2} + \frac{11n^2}{4} + \frac{3n^3}{2} + \frac{n^4}{4}$$

$$\text{Suma } k^2 = \frac{9n}{35} + \frac{9n^2}{2} + \frac{23n^3}{2} + 12n^4 + \frac{61n^5}{10} + \frac{3n^6}{2} + \frac{n^7}{7}$$

$$\text{Suma } k^3 = -\frac{9n^2}{10} + \frac{15n^3}{2} + \frac{307n^4}{8} + \frac{135n^5}{2} + \frac{1221n^6}{20} + \frac{63n^7}{2} + \frac{75n^8}{8} + \frac{3n^9}{2} + \frac{n^{10}}{10}$$

$$\text{Suma } k^4 =$$

$$-\frac{4428n}{5005} + 6n^3 + \frac{33n^4}{2} + \frac{841n^5}{10} + 246n^6 + \frac{2594n^7}{7} + 324n^8 + \frac{351n^9}{2} + 60n^{10} + \frac{139n^{11}}{11} + \frac{3n^{12}}{2} + \frac{n^{13}}{13}$$

$$\text{Suma } k^5 = \frac{162n^2}{7} - \frac{153n^4}{2} + \frac{63n^5}{2} + \frac{1367n^6}{4} + \frac{1605n^7}{2} +$$

$$\frac{166547n^8}{112} + 1965n^9 + 1715n^{10} + 990n^{11} + \frac{3053n^{12}}{8} + \frac{195n^{13}}{2} + \frac{445n^{14}}{28} + \frac{3n^{15}}{2} + \frac{n^{16}}{16}$$

$$\text{Suma } k^6 = \frac{196332336n}{1616615} - \frac{3996n^3}{5} + \frac{7893n^5}{5} + \frac{129n^6}{2} - \frac{63803n^7}{70} + 2349n^8 + 6582n^9 + \frac{18855n^{10}}{2} +$$

$$\frac{1158879n^{11}}{110} + 8979n^{12} + \frac{142895n^{13}}{26} + \frac{4725n^{14}}{2} + \frac{3531n^{15}}{5} + 144n^{16} + \frac{651n^{17}}{34} + \frac{3n^{18}}{2} + \frac{n^{19}}{19}$$

$$\text{Suma } k^7 = -\frac{596808n^2}{55} + \frac{178497n^4}{5} - \frac{469833n^6}{10} + \frac{255n^7}{2} + \frac{2758387n^8}{80} +$$

$$\frac{12999n^9}{2} + \frac{91853n^{10}}{20} + \frac{76923n^{11}}{2} + \frac{26432091n^{12}}{440} + \frac{119847n^{13}}{2} + \frac{190685n^{14}}{4} +$$

$$\frac{59871n^{15}}{2} + \frac{1127027n^{16}}{80} + \frac{9639n^{17}}{2} + 1176n^{18} + \frac{399n^{19}}{2} + \frac{112n^{20}}{5} + \frac{3n^{21}}{2} + \frac{n^{22}}{22}$$

$$\text{Suma } k^8 =$$

$$-\frac{5747638813632n}{37182145} + \frac{5085504n^3}{5} - \frac{50192136n^5}{25} + \frac{66051396n^7}{35} + \frac{513n^8}{2} - \frac{10317683n^9}{10} +$$

$$17148n^{10} + \frac{23685652n^{11}}{55} + 140910n^{12} + \frac{9868094n^{13}}{65} + 325332n^{14} + \frac{1752356n^{15}}{5} + 265764n^{16} +$$

$$\frac{27832403n^{17}}{170} + 81312n^{18} + \frac{590122n^{19}}{19} + 8820n^{20} + \frac{9089n^{21}}{5} + 264n^{22} + \frac{590n^{23}}{23} + \frac{3n^{24}}{2} + \frac{n^{25}}{25}$$

$$\begin{aligned}
 \text{Suma } k^{:9} = & \frac{22\,943\,764\,512\,n^2}{715} - \frac{738\,984\,384\,n^4}{7} + \frac{694\,618\,092\,n^6}{5} - \frac{195\,875\,145\,n^8}{2} + \\
 & \frac{1023\,n^9}{2} + \frac{6\,015\,485\,407\,n^{10}}{140} + \frac{87\,561\,n^{11}}{2} - \frac{1\,115\,543\,439\,n^{12}}{88} + 476\,334\,n^{13} + \frac{48\,901\,095\,n^{14}}{13} + \\
 & 1\,529\,514\,n^{15} + \frac{79\,988\,235\,n^{16}}{56} + 1\,854\,819\,n^{17} + 1\,522\,026\,n^{18} + 927\,504\,n^{19} + \frac{3\,724\,659\,n^{20}}{8} + \\
 & 191\,142\,n^{21} + \frac{4\,729\,035\,n^{22}}{77} + 14\,904\,n^{23} + \frac{21\,267\,n^{24}}{8} + \frac{675\,n^{25}}{2} + \frac{1503\,n^{26}}{52} + \frac{3\,n^{27}}{2} + \frac{n^{28}}{28} \\
 \text{Suma } k^{:10} = & \frac{2\,444\,130\,985\,708\,733\,184\,n}{2\,571\,288\,335} - \frac{43\,780\,450\,752\,n^3}{7} + \frac{61\,727\,964\,192\,n^5}{5} - \\
 & \frac{81\,230\,759\,928\,n^7}{7} + \frac{44\,539\,781\,001\,n^9}{7} + \frac{2049\,n^{10}}{2} - \frac{50\,238\,670\,223\,n^{11}}{22} + 108\,795\,n^{12} + \\
 & 578\,391\,824\,n^{13} + \frac{3\,029\,805\,n^{14}}{2} - \frac{1\,471\,376\,043\,n^{15}}{14} + 6\,456\,420\,n^{16} + \frac{426\,858\,762\,n^{17}}{17} + \\
 & 10\,901\,565\,n^{18} + \frac{162\,545\,115\,n^{19}}{19} + 8\,097\,327\,n^{20} + \frac{75\,046\,383\,n^{21}}{14} + 2\,725\,470\,n^{22} + \frac{53\,062\,455\,n^{23}}{46} + \\
 & 403\,470\,n^{24} + \frac{559\,236\,n^{25}}{5} + \frac{47\,385\,n^{26}}{2} + \frac{7449\,n^{27}}{2} + 420\,n^{28} + \frac{1865\,n^{29}}{58} + \frac{3\,n^{30}}{2} + \frac{n^{31}}{31}
 \end{aligned}$$

In[14]:= **sumowanie1[4, 6]**

Out[14]=

3 032 831 149 632