Cvičení 1:

Proveďte operace, upravte, uveďte podmínky:

a) $\frac{n!}{(n-1)!} - \frac{(n-1)!}{(n-2)!} = 1; n \geq 2, n \in N$

b) $\frac{(n+2)!}{(n-1)!} = n^3 + 3n^2 + 2n; n \in N$

c) $\frac{(n-1)!}{3.n!} + \frac{n!}{4.(n+1)!} = \frac{7n+4}{12n^2+12n}; n \in N$

d) $\frac{(n+5)!}{(n+3)!} - 2.\frac{(n+4)!}{(n+2)!} + \frac{(n+3)!}{(n+1)!} = 2; n \geq -1, n \in Z$

e) $\frac{3(n-6)!}{(n-8)!} - \frac{(n+1)!}{(n-1)!} - \frac{(n-3)!}{(n-5)!} = n^2 - 33n + 114; n \geq 8, n \in N$

f) $2\frac{(n+2)!}{(n+3)!} - \frac{3(n-4)!}{(n-3)!} - \frac{4(n-6)!}{(n-5)!} = \frac{-5n^2-10n+111}{(n^2-9)(n-5)}; n \geq 6, n \in N$

g) $\frac{n!}{(n-3)!} + \frac{(n+1)!}{(n-2)!} + \frac{(n+2)!}{(n-1)!} - (n^2+4) = 3n^3 - n^2 + 3n - 4; n \geq 3, n \in N$

h) $\frac{(n-5)!}{(n-7)!} - \frac{n!}{(n-2)!} - \frac{2(n+3)!}{(n+1)!} = -2n^2 - 20n + 18; n \geq 7, n \in N$

i) $\frac{(n-5)!}{(n-7)!} - \frac{n!}{(n-2)!} - \frac{2(n+3)!}{(n+1)!} = -2n^2 - 20n + 18; n \geq 7, n \in N$

j) $\frac{n!}{(n-3)!} + \frac{(n+1)!}{(n-2)!} + \frac{(n+2)!}{(n-1)!} - (n^2+4) = 3n^3 - n^2 + 3n - 4; n \geq 3, n \in N$