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sol[kk_, nn_] := PP"sol"[kk, nn] @Block[{$k = kk, $n = nn}, Module[{(*TTL, *)},
ES[s_][ε_] := (EchoLabel[s][Short[ε, 5]]); ε);
TTL = ES["TTL"] @TTλ@
Join[
Cases[$PBWGens, g_ => Which[
τ[g] === "x", λ(g*)i Uk[g],
τ[g] === "a", (g*)i Uk[g]
]],
Cases[$PBWGens, g_ => Which[
τ[g] === "x", λ(g*)j Uk[g],
τ[g] === "a", (g*)j Uk[g]
]]
];
mons[-1] = {};
mons[p_] := mons[p - 1] ∪ Union@Cases[Coefficient[TTL, ε, p], Uk[____], ∞];
ff = Table[
Sum[εp fp,u[λ], {p, 0, $k}],
{u, $PBWGens}
] /. fp,u[λ] /; τ[u] == "a" => If[p == 0, (u*)i + (u*)j, 0];
fs = Flatten[Table[
fk, Times@@m,
{k, 0, $k}, {m, mons[k]}
]];
gg = Sum[
εp fp, Times@@u[λ] Times @@ u,
{p, 0, $k}, {u, Complement[mons[p], Uk /@ $PBWGens]}
];
G = Series[egg, {ε, 0, $k}];


```

$$\begin{aligned}
L_\lambda &= \mathbb{C}\langle \lambda \rangle_{\mathbb{N}_0} \langle \mathbb{C}\langle \lambda \rangle_{\mathbb{N}_0} x \rangle & \text{Seepage is defined by: } \mathbb{C}\langle f, x \rangle \mathbb{C}\langle \text{Seepage}(\{f\}, A) \rangle &= \mathbb{C}\langle e^{f, x} A \rangle \\
\mathbb{T}\mathbb{T}(L_\lambda) &= L'_\lambda \partial_\lambda L_\lambda & \mathbb{S}(B) &= \text{Seepage}(\{f\}, B). \\
R_\lambda &= \mathbb{C}\langle f+g \rangle, \quad f = f_i x_i, \quad g = \sum_{i,j \in \mathbb{N}} g_{ij} x_i x_j & e^f = F, \quad e^g = G, \quad R_\lambda = \mathbb{C}\langle FG \rangle, \quad \partial_\lambda F = F \partial_\lambda f \\
\mathbb{T}\mathbb{T}(R_\lambda) &= R'_\lambda \partial_\lambda R_\lambda = \mathbb{C}\langle FG \rangle' \mathbb{C}\langle \partial_\lambda FG \rangle = \mathbb{S}(G)' \mathbb{C}\langle F \rangle' \mathbb{C}\langle F(\partial_\lambda f G + \partial_\lambda G) \rangle = \mathbb{S}(G)' \mathbb{S}(\partial_\lambda f G + \partial_\lambda G).
\end{aligned}$$

```

Si_[B_] := UCF[SS@Oi[Seepagei[ff, SS@UCF@B]]];
SG = ES["SG"] @Sk[G];
TTR = ES["TTR"] @UCF[Invertk[SG] ⊗ Sk[(∂λ(ff.$PBWGens) G + ∂λG)]];
diff = ES["diff"] @UCF[TTL - TTR];
eqns = ES["eqns"] @Flatten[Table[
Coefficient[Coefficient[diff, m], ε, k] == 0,
{k, 0, $k}, {m, mons[k]}
]];
inits = (#[0] == 0) & /@ fs;
ES["DSolve"][DSolve[eqns ∪ inits, fs, λ] /. F_Function => ReplacePart[F, 2 -> CF[F[[2]]]]]
]]

```