Exercise 2.7 Selective kill

```
{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u#}::Indices(position=independent).

\partial{#}::PartialDerivative.

hide   := \partial_{d}{\Gamma^{a}_{b c}} -> Z_{d a b c}.
reveal := Z_{d a b c} -> \partial_{d}{\Gamma^{a}_{b c}}.

kill := \Gamma^{a}_{b c} -> 0.

Gamma := \Gamma^{a}_{b c}
       + x^{d} \partial_{d}{\Gamma^{a}_{b c}}.       # cdb (ex-0207.101,Gamma)

substitute (Gamma,hide)                              # cdb (ex-0207.102,Gamma)
substitute (Gamma,kill)                              # cdb (ex-0207.103,Gamma)
substitute (Gamma,reveal)                            # cdb (ex-0207.104,Gamma)
```

$$\begin{aligned}
\Gamma^{a}{}_{bc}(x) &= \Gamma^{a}{}_{bc} + x^{d}\partial_{d}\Gamma^{a}{}_{bc} && \texttt{(ex-0207.101)}\\
&= \Gamma^{a}{}_{bc} + x^{d} Z_{dabc} && \texttt{(ex-0207.102)}\\
&= x^{d} Z_{dabc} && \texttt{(ex-0207.103)}\\
&= x^{d}\partial_{d}\Gamma^{a}{}_{bc} && \texttt{(ex-0207.104)}
\end{aligned}$$

Exercise 2.7 Naive kill

```
{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u#}::Indices(position=independent).

\partial{#}::Derivative.

kill := \Gamma^{a}_{b c} -> 0.

Gamma := \Gamma^{a}_{b c}
       + x^{d} \partial_{d}{\Gamma^{a}_{b c}}.       # cdb (ex-0207.201,Gamma)

substitute (Gamma,kill)                              # cdb (ex-0207.202,Gamma)
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$$\Gamma^{a}{}_{bc}(x) = \Gamma^{a}{}_{bc} + x^{d}\partial_{d}\Gamma^{a}{}_{bc} \tag{ex-0207.201}$$

$$= 0 \tag{ex-0207.202}$$

Exercise 2.7 No problem killing partial derivatives

```
{a,b,c,d,e,f,g,h,i,j,k,l,m,n,o,p,q,r,s,t,u#}::Indices(position=independent).

\partial{#}::PartialDerivative.

kill := \partial_{c}{A_{a b}} -> 0.

Aab := A_{a b} + x^{c} \partial_{c}{A_{a b}}
              + x^{c} x^{d} \partial_{d}{\partial_{c}{A_{a b}}}.    # cdb (ex-0207.301,Aab)

substitute (Aab,kill)                                               # cdb (ex-0207.302,Aab)
```

$$A_{ab}(x) = A_{ab} + x^{c}\partial_{c}A_{ab} + x^{c}x^{d}\partial_{dc}A_{ab} \tag{ex-0207.301}$$

$$= A_{ab} + x^{c}x^{d}\partial_{dc}A_{ab} \tag{ex-0207.302}$$