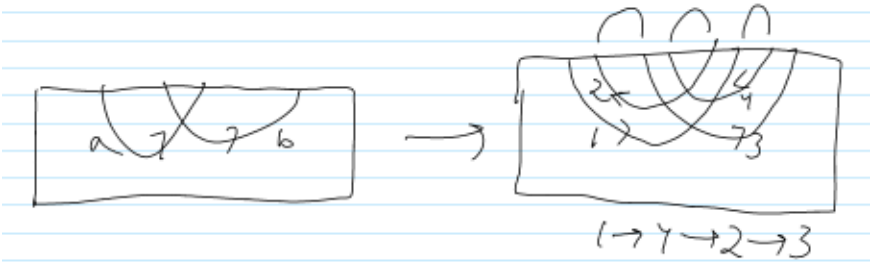
Pensieve Header: An attempt on the genus property using Γ-calculus and the C2 divisibility property.

```
dir = SetDirectory["C:/drorbn/AcademicPensieve/2014-06/"];
<< MetaCalculi/MetaCalculi-Program.m
```




```
γ0 = Γ[ω[T_a, T_b], h_a T_a^α T_b^γ + h_b T_a^β T_b^δ,
  {t_a t_b}.((T_a^α T_b^γ + (T_a - 1) α[T_a, T_b]   (T_a - 1) β[T_a, T_b])
             ((T_b - 1) γ[T_a, T_b]   T_a^β T_b^δ + (T_b - 1) δ[T_a, T_b])).{h_a h_b}]
```

$$\begin{pmatrix} \omega[T_a, T_b] & s_a & s_b \\ s_a & T_a^\alpha T_b^\gamma - \alpha[T_a, T_b] + T_a\,\alpha[T_a, T_b] & (-1+T_a)\,\beta[T_a, T_b] \\ s_b & (-1+T_b)\,\gamma[T_a, T_b] & T_a^\beta T_b^\delta - \delta[T_a, T_b] + T_b\,\delta[T_a, T_b] \\ \Sigma & T_a^\alpha T_b^\gamma & T_a^\beta T_b^\delta \end{pmatrix}$$

```
γ1 = γ0 // qΔ[a, 1, 2] // dS[2] // qΔ[b, 3, 4] // dS[4]
```

$$\left(\left(\frac{T_1}{T_2}\right)^{-\alpha-\beta}\left(\frac{T_3}{T_4}\right)^{-\gamma-\delta}\left(\left(\frac{T_1}{T_2}\right)^{\alpha+\beta}T_2\left(\frac{T_3}{T_4}\right)^{\gamma+\delta}T_4+\left(\frac{T_1}{T_2}\right)^{\beta}\left(\frac{T_3}{T_4}\right)^{\delta}T_4\,\alpha\left[\frac{T_1}{T_2},\frac{T_3}{T_4}\right]-\left(\frac{T_1}{T_2}\right)^{\beta}T_2\left(\frac{T_3}{T_4}\right)^{\delta}T_4\,\alpha\left[\frac{T_1}{T_2},\frac{T_3}{T_4}\right]-\beta\left[\frac{T_1}{T_2},\frac{T_3}{T_4}\right]\gamma\left[\frac{T_1}{T_2},\frac{T_3}{T_4}\right]+T_2\,\beta\left[\frac{T_1}{T_2},\frac{T_3}{T_4}\right]\gamma\left[\frac{T_1}{T_2},\frac{T_3}{T_4}\right]+1\right.$$

```
γ2 = γ1 // dm[1, 4, 1]
```

$$\left(\frac{\left(\frac{T_1}{T_2}\right)^{-\alpha-\beta}\left(\frac{T_3}{T_1}\right)^{-\gamma-\delta}\left(T_1\left(\frac{T_1}{T_2}\right)^{\alpha+\beta}T_2\left(\frac{T_3}{T_1}\right)^{\gamma+\delta}+T_1\left(\frac{T_1}{T_2}\right)^{\beta}\left(\frac{T_3}{T_1}\right)^{\delta}\alpha\left[\frac{T_1}{T_2},\frac{T_3}{T_1}\right]-T_1\left(\frac{T_1}{T_2}\right)^{\beta}T_2\left(\frac{T_3}{T_1}\right)^{\delta}\alpha\left[\frac{T_1}{T_2},\frac{T_3}{T_1}\right]-T_1\left(\frac{T_1}{T_2}\right)^{\alpha}\left(\frac{T_3}{T_1}\right)^{\gamma}\beta\left[\frac{T_1}{T_2},\frac{T_3}{T_1}\right]+T_1^2\left(\frac{T_1}{T_2}\right)^{\alpha}\left(\frac{T_3}{T_1}\right)^{\gamma}\beta\left[\frac{T_1}{T_2},\frac{T_3}{T_1}\right]\right.$$

```
γ3 = γ2 // dm[1, 2, 1]
```

$$\left(\frac{\left(\frac{T_3}{T_1}\right)^{-\gamma-\delta}\left(T_1^2\left(\frac{T_3}{T_1}\right)^{\gamma+\delta}-T_1\alpha\left[1,\frac{T_3}{T_1}\right]+T_1^2\alpha\left[1,\frac{T_3}{T_1}\right]+T_1\left(\frac{T_3}{T_1}\right)^{\delta}\alpha\left[1,\frac{T_3}{T_1}\right]-T_1^2\left(\frac{T_3}{T_1}\right)^{\delta}\alpha\left[1,\frac{T_3}{T_1}\right]-T_1\left(\frac{T_3}{T_1}\right)^{\gamma}\beta\left[1,\frac{T_3}{T_1}\right]+T_1^2\left(\frac{T_3}{T_1}\right)^{\gamma}\beta\left[1,\frac{T_3}{T_1}\right]+T_1\gamma\left[1,\frac{T_3}{T_1}\right]-T_1^2\gamma\left[1,\right.\right.\right.$$

```
γ4 = (γ3 // dm[1, 3, 1]) /. α_[1, 1] :→ α1
```

$$\begin{pmatrix} -\frac{\left(-T_1^2+T_1\beta_1-T_1^2\beta_1-T_1\gamma_1+T_1^2\gamma_1+\beta_1\gamma_1-2T_1\beta_1\gamma_1+T_1^2\beta_1\gamma_1-\alpha_1\delta_1+2T_1\alpha_1\delta_1-T_1^2\alpha_1\delta_1\right)\omega_1}{T_1^2} & s_1 \\ s_1 & 1 \\ \Sigma & 1 \end{pmatrix}$$