```
> restart;with(linalg):with(LinearAlgebra):alias(sigma=sigma(t)):
> S3dash:=(t*diff(sigma,t,t))^2+(4*diff(sigma,t)^2-1)*(t*diff
  (sigma,t)-sigma)+theta[0]*theta[2]*diff(sigma,t)-1/4*(theta[0]^2+
  theta[2]^2);
```

$$S3dash := t^2\left(\frac{\partial^2}{\partial t^2}\,\sigma\right)^2+\left(4\left(\frac{\partial}{\partial t}\,\sigma\right)^2-1\right)\left(t\left(\frac{\partial}{\partial t}\,\sigma\right)-\sigma\right)+\theta_0\,\theta_2\left(\frac{\partial}{\partial t}\,\sigma\right)-\frac{1}{4}\,\theta_0^2-\frac{1}{4}\,\theta_2^2 \tag{1}$$

```
> n:=2;epsilon[1]:=1;epsilon[2]:=1;
```

$$n := 2$$

$$\varepsilon_1 := 1$$

$$\varepsilon_2 := 1 \tag{2}$$

```
> phi:=t^(epsilon[1]*nu/2)*(BesselJ(nu,2*sqrt(epsilon[1]*epsilon[2]
  *t))-BesselY(nu,2*sqrt(epsilon[1]*epsilon[2]*t)));
```

$$\phi := t^{\frac{1}{2}\nu}\left(\mathrm{BesselJ}\left(\nu, 2\sqrt{t}\right)-\mathrm{BesselY}\left(\nu, 2\sqrt{t}\right)\right) \tag{3}$$

```
> phi:for k from 1 to n do;l[k]:=diff(%,t)*t;od:wronskian([phi,seq
  (l[j],j=1..n-1)],t):for j from 1 to n do;h[j]:=Row(%,1);row(%%,2)
  ;wronskian(%*t,t):od:<seq(h[j],j=1..n)>:tau:=det(%):
> sigma:=simplify(t*diff(ln(tau),t)+1/2*(epsilon[1]*epsilon[2]*t+
  nu^2/2+n*(1-epsilon[1]*nu)-n^2/2)):
> theta[0]:=nu+n;theta[2]:=epsilon[1]*epsilon[2]*(nu-n);
```

$$\theta_0 := \nu + 2$$

$$\theta_2 := \nu - 2 \tag{4}$$

```
> simplify(S3dash);
```

$$0 \tag{5}$$