```
> restart:
> V := phi -> lambda/4*(phi^2-1)^2;
```

$$V := \phi \mapsto \frac{\lambda \left(\phi^2 - 1\right)^2}{4} \tag{1}$$

```
> DV = diff(V(phi),phi)
```

$$DV = \lambda \left(\phi^2 - 1\right) \phi \tag{2}$$

```
> S := tanh((x-v*t)/sigma); sigma := sqrt(2/lambda * (1-v^2));
```

$$S := \tanh\left(\frac{-v\,t + x}{\sigma}\right)$$

$$\sigma := \sqrt{2}\sqrt{\frac{-v^2 + 1}{\lambda}} \tag{3}$$

```
> -diff(S,t$2) + diff(S,x$2) - subs(phi=S, diff(V(phi),phi));
  simplify(%);
```

$$\frac{v^2 \lambda \tanh\left(\frac{(-t\,v + x)\sqrt{2}}{2\sqrt{\frac{-v^2+1}{\lambda}}}\right)\left(1 - \tanh\left(\frac{(-t\,v + x)\sqrt{2}}{2\sqrt{\frac{-v^2+1}{\lambda}}}\right)^2\right)}{-v^2 + 1}$$

$$- \frac{\lambda \tanh\left(\frac{(-t\,v + x)\sqrt{2}}{2\sqrt{\frac{-v^2+1}{\lambda}}}\right)\left(1 - \tanh\left(\frac{(-t\,v + x)\sqrt{2}}{2\sqrt{\frac{-v^2+1}{\lambda}}}\right)^2\right)}{-v^2 + 1}$$

$$- \lambda \left(\tanh\left(\frac{(-t\,v + x)\sqrt{2}}{2\sqrt{\frac{-v^2+1}{\lambda}}}\right)^2 - 1\right) \tanh\left(\frac{(-t\,v + x)\sqrt{2}}{2\sqrt{\frac{-v^2+1}{\lambda}}}\right)$$

$$0 \tag{4}$$