

13

$$\begin{aligned}\frac{\partial \phi}{\partial t}(t, x) &= -\frac{1}{2} t^{-3/2} \left( \phi\left(\frac{x}{\sqrt{t}}\right) + \frac{x}{\sqrt{t}} \phi'\left(\frac{x}{\sqrt{t}}\right) \right) \\ &= -\frac{1}{2} t^{-3/2} \left( 1 - \frac{x^2}{t} \right) \phi\left(\frac{x}{\sqrt{t}}\right)\end{aligned}$$

$$\begin{aligned}\frac{\partial^2 \phi}{\partial x^2}(t, x) &= t^{-3/2} \phi''\left(\frac{x}{\sqrt{t}}\right) \\ &= t^{-3/2} \left( \frac{x^2}{t} - 1 \right) \phi\left(\frac{x}{\sqrt{t}}\right)\end{aligned}$$

D

14