Solve the given initial value problem:

\[ y'' - 4y' + 4y = 0, \quad y(1) = 1, \quad y'(1) = 1. \]

**Solution:** The characteristic equation

\[ r^2 - 4r + 4 = 0, \]

has a double root \( r = 2 \). The general solution is therefore

\[ y(t) = (C_0 + C_1t)e^{2t}. \]

Since

\[ y'(t) = (2C_0 + C_1 + 2C_1t)e^{2t}, \]

from the initial conditions we obtain the following equations:

\[
\begin{align*}
e^2C_0 + e^2C_1 &= 1 \\
2e^2C_0 + 3e^2C_1 &= 1,
\end{align*}
\]

the solutions of which are \( C_0 = 2/e^2 \) and \( C_1 = -1/e^2 \). Therefore, the solution to the given initial value problem is

\[ y(t) = \frac{2}{e^2}e^{2t} - \frac{t}{e^2}e^{2t} = (2 - t)e^{2(t-1)}. \]