



6. $y''_{xx} = x^{-1}f(yx^{-1})$.

Homogeneous equation. The transformation $t = -\ln|x|$, $z = y/x$ leads to an autonomous equation: $z''_{tt} - z'_t = f(z)$. The substitution $U(z) = z'_t$ leads to a first-order equation of the form $UU'_z - U = f(z)$.

Reference

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