



$$\mathbf{8.} \quad \frac{\partial u}{\partial t} = \frac{a}{x^n} \frac{\partial}{\partial x} \left(x^n \frac{\partial u}{\partial x} \right) + u f(x, u^k w^m), \quad \frac{\partial w}{\partial t} = \frac{b}{x^n} \frac{\partial}{\partial x} \left(x^n \frac{\partial w}{\partial x} \right) + w g(x, u^k w^m).$$

Multiplicative separable solution:

$$u = e^{-m\lambda t}y(x), \quad w = e^{k\lambda t}z(x),$$

where λ is an arbitrary constant and the functions y = y(x) and z = z(x) are determined by the system of ordinary differential equations

$$ax^{-n}(x^{n}y'_{x})'_{x} + m\lambda y + yf(x, y^{k}z^{m}) = 0,$$

$$bx^{-n}(x^{n}z'_{x})'_{x} - k\lambda z + zg(x, y^{k}z^{m}) = 0.$$

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