



$$10. \quad \frac{\partial u}{\partial t} = \frac{a}{x^n} \frac{\partial}{\partial x} \left( x^n \frac{\partial u}{\partial x} \right) + cu \ln u + u f(x, u^k w^m),$$
$$\frac{\partial w}{\partial t} = \frac{b}{x^n} \frac{\partial}{\partial x} \left( x^n \frac{\partial w}{\partial x} \right) + cw \ln w + wg(x, u^k w^m).$$

Multiplicative separable solution:

$$u = \exp(Ame^{ct})y(x), \quad w = \exp(-Ake^{ct})z(x),$$

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

$$ax^{-n}(x^n y'_x)'_x + cy \ln y + y f(x, y^k z^m) = 0,$$
$$bx^{-n}(x^n z'_x)'_x + cz \ln z + zg(x, y^k z^m) = 0.$$