5. $x'_t = f(t)x + g(t)y, \quad y'_t = ag(t)x + [f(t) + bg(t)]y.$

The transformation

$$x = \exp\left[\int f(t)\,dt\right]u, \quad y = \exp\left[\int f(t)\,dt\right]v, \quad \tau = \int g(t)\,dt$$

leads to a system of constant coefficient linear differential equations of the form 1.1:

$$u'_\tau = v, \quad v'_\tau = au + bv.$$

