19. $x''_{tt} = ay'_t\Phi(x, y, t, x'_t, y'_t) + f(x), \quad y''_{tt} = bx'_t\Phi(x, y, t, x'_t, y'_t) + g(y).$

First integral:

$$b(x'_t)^2 - a(y'_t)^2 + 2a\int g(y)\,dy - 2b\int f(x)\,dx = C,$$

where C is an arbitrary constant.

Remark. The function Φ can also depend on the second and higher derivatives with respect to t.

