

HW2. Find a general solution to

$$x' - \frac{x}{t} = \frac{1}{2x}$$

(Hint: use Bernoulli substitution.)

Find the solutions which satisfy initial conditions $x(1) = 2$ and $x(1) = -1$, respectively.

HW3. Find all the solutions to

$$tx' = x(1 + \ln(x/t))$$

(Hint: this is a homogeneous equation, i.e. set $x = tz$, where z is a new unknown function.)

Do not forget to specify the domain (interval) of validity for all of your solutions!