1. Solve the following differential equation with the given initial conditions using classical method (not using Laplace).

\[
\frac{d^2x}{dt^2} + 2 \frac{dx}{dt} + x = 5e^{-2t} + t
\]

\[x(0) = 2; \frac{dx}{dt}(0) = 1\]

2. Find the ramp response of a system whose transfer function is \(\frac{s}{(s + 4)(s + 8)}\).

3. Find the transfer function from the input voltage to the output voltage of the given circuit.

4. Write down the equations that are generated in the following system.

5. Find the transfer function from \(T_1\) to \(\theta_1\) for the following.